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SOME PHYSICAL CHARACTERISTICS OF MALE GARMENT-WORKERS OF THE CLOAK AND SUIT TRADES, BASED UPON 2,107 PHYSICAL EXAMINATIONS MADE IN NEW YORK, N. Y.

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IN CONSIDERING the effect of occupations upon the health, it is necessary to study the average physical status of workers in the occupations under consideration. The Public Health Service is now engaged in making studies of this character, an investigation having already been completed by the Service during the past summer under the writer's direction, as to the physical condition of workers engaged in one of the typical industries, that of garment-making.

This investigation was undertaken at the solicitation of the Joint Board of Sanitary Control of the cloak and suit, dress and shirt-waist trades of New York. The object of the investigation was to examine into the condition of the health of male and female workers in this occupation, as well as into lighting and ventilating conditions in shops of the trade, with a view to making any necessary recommendations for the sanitary improvement of the industry.

During the course of the investigation, over 2,000 male and 1,000 female garment-workers were physically examined. It has not been practicable, for lack of time, to tabulate as yet the results of the physical examinations of female garment-workers. These results, however, in regard to the males, have been tabulated. I have been requested by the Secretary of the Section on Vital Statistics to present a paper on some of the results of the examination.

While it is impossible, in the space of time at my disposal, to give more than a summary of the physical characteristics of these garment-workers, it is thought that the data herewith presented may be of interest to the Section. It is evident that their comparative value will be much enhanced when the Public Health Service shall have obtained similar data for other occupations. This the Service hopes to do as facilities permit.

Type of Physical Examination Made.—The type of physical examination made was thorough. An aver-

age of 40 to 50 minutes was spent in the examination of each individual. Besides examining the condition of the viscera, observations were made as to the height, weight, circumference of the chest, at rest, at full inspiration, at expiration, the abdominal circumference, vital capacity, strength of grip of right and left hands, of pulse rate, of systolic and diasystolic blood pressure, hemoglobin, condition of the teeth, state of the vision, of the orifices of the body, condition of bones and joints and extremities, the incidence of sugar and albumen in the urine, and in 273 instances the blood was tested for the presence of syphilitic antibodies. Arrangement was also made through the kindness of the faculty of Cornell Medical School for the cooperation of that institution, through which the facilities of their laboratories were placed at the disposal of the Service for chemical investigations as to the composition of the air in the shops of the garment trades, and also in the making of special examinations of workers at the Cornell dispensary, either for special conditions requiring further examination, or when the nature of the disease or the defect could not be made out at the primary examination.

Results of the Physical Examination.—Social Data.

Classification of Male Garment-Workers.—For the purpose of classification, the workers of the garment trades may be divided into the 5 following groups:

1, cutters; 2, operators; 3, finishers; 4, pressers, and 5, miscellaneous workers (tailors, sample makers, button-hole makers, bushelmen, and the like). These perform the following duties: Cutters cut out the garments from bolts of cloth according to the patterns furnished them; operators sew the pieces thus cut out by means of electrically-driven sewing machines, each operator making the entire garment, so far as this can be accomplished, on the machine; finishers perform in general such operations upon the garments as have to be done by hand, such as basting, overcasting of seams, sewing on buttons and the like; the pressers, as their name indicates, press the garments whenever this is required. Of these, two classes of workers, namely, cutters and pressers, work in the standing posture, while two, namely the operators and finishers, work sitting. There are thus important postural differences between the various classes of garment-workers which are not without an effect upon them. In addition to this there is also a difference in the wage scale of these workers, two of the groups (operators and finishers) being paid on a piece-work basis, while the remaining two groups (cutters and pressers) are paid by the week.

Number of Each Class Examined.—The following number of each group was examined: Cutters, 48; operators, 976; pressers, 720; finishers, 280; miscellaneous workers, 79; total, 2,091.

Race.—Of the garment-workers examined, 96.6 per cent. were of the Jewish race, 3.08 per cent. were Italians, and 0.19 per cent. were Poles.

Nativity.—80.4 per cent. of the garment-workers examined were born in Russia; 15.2 per cent. were born in Austria; 1.19 per cent. were born in Roumania; 0.047 per cent. were born

in England; 0.047 per cent. were born in Turkey; .047 per cent. were born in Germany, and 3.09 per cent. were born in Italy. In two instances, only, were the workers born in the United States.

Nativity; Length of Time in the United States.—The average length of time of the workers in the United States were as follows: Cutters, 8.62 years; operators, 10 years, pressers, 8.35 years; finishers, 8.69 years; miscellaneous workers, 9.05 years. The average length of time in the United States for all the garment-workers examined was 9.25 years.

Length of Time in Special Occupation.—The workers examined had followed their special occupations for the following average time: Operators, 9.48 years; pressers, 7.76 years; finishers, 8.56 years; cutters, 6.58 years, miscellaneous workers, 17.4 years. The average time spent in their special occupations, for all male garment-workers, was 8.99 years.

The indications, therefore, are that, with the exception of the small group of miscellaneous workers, the male garment-workers took up their special occupations shortly after their arrival in the United States.

Civil Condition.—In regard to the civil condition, the following percentages of male garment-workers were respectively single and married:

	Per cent. married.	Per cent. single.
Operators	66.5	33.5
Pressers	83.28	16.72
Finishers	81.00	19.00
Cutters	29.00	71.00
Miscellaneous workers	81.6	17.4

Fertility of Married Garment-workers.—The following observations as to fertility were made in the case of married garment-workers: The total number of children born, to 1,518 married garment-workers, was 4,878, of which 14,096 were living and 882 dead at the time of the examination. The percentage of children who died to the total number born was, therefore, 15.82 per cent.

The average of all children born to married garment-workers was thus 13.21 per married workers. The average number of children living at the time of the examination was 2.7 children per family, leaving an average of 1.57 children per family dead, prior to the time of the examination. Examining the group of fertility and mortality of married garment-workers, the following results were noted:

Married Operators (639).—Average number of living children per operator, 2.39; of children dead, .31; of total children born, 2.70.

Married Pressers (578).—Average number of living children per presser, 2.83; average number of children dead, .58; average total children born, 3.41.

Married Finishers (225).—Average number of living children per finisher, 3.70; average number of children dead, .93; average total number of children born, 4.63.

Married Miscellaneous Workers (48).—Average number of children living, 2.66; of children dead, .45; of total children born, 3.11.

Married Cutters (14).—Average number of living children, per cutter, .71; number of children dead, .21; total number of children born per cutter, .92.

The percentage of children dead to

those alive was as follows for these groups: Operators, 11.7 per cent.; pressers, 17.11 per cent.; finishers, 21.7 per cent.; cutters, 23 per cent.; and miscellaneous, 17 per cent. It is thus seen that the group presenting the highest fertility, namely, the finishers, had also the greatest mortality among the children born to them with the exception of the cutters, in which group the number of observations is too small for basing conclusions.

Income of Garment-Workers.—In determining the annual amounts earned by garment workers, reliance had to be placed upon their individual statements. These statements furnish the following results:

Miscellaneous workers	$789
Cutters	720
Operators	666
Pressers	562
Finishers	486

The higher wages earned by the miscellaneous workers are due to the fact that this group contained a large proportion of special qualified workers, some of whom earned wages to the amount of $1,500 annually.

The average income of all male garment-workers was $611.50 per annum. The annual income of garment-workers is not in direct proportion to the weekly wages, for the reason that employment is not continuous in the cloak and suit trade. This occupation presents a marked seasonal fluctuation in activity, the shops running full-time and over-time in the busy spring and fall seasons, while during the summer months and the middle of winter, there is relatively little work to do.

Hours of Labor.—The hours of work for all garment-workers in the cloak and suit trade in New York are 54 per week with a half day on Saturday.

Physical Data.

Age of Garment-Workers.—The average age of all the male garment-workers examined was 32.26 years. The age by groups was as follows: Cutters, 25.36 years; operators, 29.53 years; pressers, 34.59 years, miscellaneous workers, 35.04 years; finishers, 35.6 years. The following table gives the age distribution in 5-year age groups:

Age.	No.	Per cent.
17–19	38	1.82
20–24	382	18.83
25–29	522	25.00
30–34	447	21.4
35–39	303	14.5
40–44	207	9.9
45–49	92	4.4
50–54	59	2.82
55–59	28	1.34
60–64	8	.382
65–69	4	.191
70–74	1	.047

It will be seen that 79 per cent. were between 20 and 34 years old, and over 90 per cent. were between 20 and 40 years of age. The maximum age incidence was found between the ages of 30 and 34 years. So far as the maximum age incidence in the groups is concerned, in operators this fell between 25 and 29; in pressers, between 30 and 34; in cutters, between 20 and 24; in finishers the age incidence was nearly equal for the age-periods from 20 to 24, 25 to 29, 30 to 34, and 35 to 39.

Height.—For various reasons it was impracticable to measure the heights of male garment-workers otherwise than in their shoes. The average heights

recorded are therefore about seven eighths of an inch in excess of the actual height. The average height of all male garment-workers examined was found to be 65.46 inches. In the groups the following average heights were found:

Pressers, 65.82 inches.
Cutters, 65.73 inches.
Operators, 65.35 inches.
Miscellaneous workers, 65.3 inches.
Finishers, 64.69 inches.

The following table gives the distribution of the heights observed:

Height between		Per cent.
57–58 inches,	1	.047
58–59	1	.047
59–60	5	.239
60–61	28	1.34
61–62	70	3.35
62–63	159	7.62
63–64	266	12.70
64–65	338	16.2
65–66	381	18.24
66–67	343	16.42
67–68	232	11.1
68–69	131	6.28
69–70	84	4.02
70–71	30	1.44
71–72	15	.72
72–73	3	.141

It will be seen from this table that the maximum incidence of height fell between 65 and 66 inches. In 1,328 instances or in over 62 per cent. the height fell between 63 and 67 inches, and in 75 per cent. of the instances, the height was between 63 and 68 inches.

In considering the average heights of the various groups of garment-workers it will be seen that the pressers are the tallest, followed in order by the cutters, operators, miscellaneous workers, and lastly the finishers. The difference between the height of this latter and the tallest group (pressers) is 1.13 inches.

Average Weights of Garment-Workers.—It was also found impractical to weigh the garment workers naked. All weights were taken with the individual clad in his shoes and trousers, the body being naked from the waist up. The weights so obtained were on an average about 3½ pounds in excess of the actual weight. The average weight for all male garment-workers was found to be 141.21 pounds. The average weights according to groups were as follows:

Miscellaneous workers.....146.8 lbs.
Pressers.....146.43 lbs.
Operators.....138.70 lbs.
Finishers.....136.48 lbs.
Cutters.....135.99 lbs.

Again it will be seen that the finishers manifest an inferiority in weight, as they do in height, to both operators and pressers. Although the cutters are the lightest of the groups, the low average age of the cutters and their standing position, together with the nature of their work, which does not call for any great muscular exertion, would probably account for their lighter weight. In the groups represented by large numbers the pressers manifest a decided superiority in weight as they do in height. In this group of workers we have an occupation which entails considerable muscular exertion in handling the heavy pressing iron, together with the muscular effort required by the maintenance of the erect posture.

The following table shows the average weights of garment-workers observed for each height:

Height between	Weight in lbs.
57–58 inches	142.75
58–59 inches	115.00
59–60 inches	118.75
60–61 inches	117.70
61–62 inches	126.23
62–63 inches	131.11
63–64 inches	134.00
64–65 inches	137.25
65–66 inches	141.27
66–67 inches	143.68
67–68 inches	148.73
68–69 inches	153.17
69–70 inches	156.00
70–71 inches	167.35
71–72 inches	161.70
72–73 inches	151.50

This table shows a fair correlation except for heights between 57 and 58 inches, 71 and 72 inches, and 72 to 73 inches. This lack of correlation is, of course, due to the small number of observations at these heights. Excluding the heights in which the observations are too few to be considered, it was found that the average increment in weight for each inch of added height was 4.97 pounds, between 61 and 71 inches.

Circumference of Chest.—Three measurements were taken of each chest at the nipple line; at rest; at full inspiration, and at forced expiration.

The following table gives the averages found:

CIRCUMFERENCE OF CHEST OF MALE GARMENT WORKERS.

	Chest at rest.	Inspiration.	Expiration.	Expansion.
Pressers	36.00 in.	37.24 in.	35.60 in.	1.64
Miscellaneous garment-workers	35.9	37.14	35.35	1.79
Operators	34.90	36.21	34.40	1.81
Finishers	34.61	36.00	34.37	1.63
Cutters	34.17	35.72	33.86	1.86
General average	35.27	36.57	34.82	1.75

It will be seen from the above table that the pressers have the largest chests, followed in order by the miscellaneous worker, operators, finishers, and cutters. The highest expansion, however, was found in the cutters, and next to these, the operators. This is doubtless due to the low average age in these groups, which would be accompanied by a greater mobility of the thoracic walls.

Vital Capacity.—The average vital capacity of cutters was 238.2 cubic inches; of operators, 230.1 cubic inches; of pressers, 227.9 cubic inches; of miscellaneous workers, 212.8 cubic inches and finishers, 204.8 cubic inches.

It is seen from the above, that the finishers are again inferior to the other groups of garment-workers. It is worth noting that pressers, though superior to operators, both in height

and average circumference of chest, are their inferiors in average chest expansion. The youngest group of workers, *i. e.*, the cutters, showed the greatest average chest expansion and vital capacity. The operators, next in point of age, showed the second highest chest expansions and vital capacities. The greater average age of pressers as well as the presence among them of a larger number of cases of pulmonary emphysema is, in all likelihood, the cause of their lesser vital capacity and chest expansion, as compared to the younger groups of operators and cutters. The maximum observation of vital capacity, however, *i. e.*, 340 cubic inches, occurred in a presser. The vital capacity measurements showed a better correlation to height than the chest measurements.

Abdominal Circumference.—The abdominal circumference was taken at the level of the umbilious. The average was found to be 32.42 inches. The difference between the average chest and average abdominal circumference was, therefore, 2.85 inches. The cutters, by reason of their youth, showed the lowest average abdominal circumference of 30.5 inches. Then followed, in order, operators with an average of 32.18 inches; finishers with 32.56 inches; pressers with 32.98 inches, and miscellaneous workers with 33.85 inches. The excess of chest over abdominal circumference, therefore, was 3.67 inches for cutters, 3.02 inches for pressers, 2.72 inches for operators, and 2.05 inches for both finishers and miscellaneous workers. It is thought that the standing posture, at work, of both cutters and pressers, has an influence in determining the lesser relative circumference of the abdomen as compared to the chest, in these two groups of workers.

Strength of Grip.—The average strength of grip of male garment-workers was found to be 94.5 pounds for the right and 85.5 pounds for the left hands. Cutters had the highest average grip with 101.4 pounds in the right hand and 89.4 pounds in the left hand. Pressers came next with 96.2 and 87.2 pounds respectively; then operators with 94 pounds in the right and 84.9 pounds in the left. Miscellaneous workers with 88.5 in the right and 78.5 pounds in the left, while finishers showed 79.15 pounds in the right and 70.25 pounds in the left hands. The maximum observation was 190 pounds in the right hand and 160 pounds in the left hand. All the averages given above are undoubtedly rather low. The finishers manifested the same inferiority in strength of grip that they showed in other measurements.

Evidences of Protection against Smallpox.—The garment-workers, as a class, showed a high degree of protection against smallpox by vaccination. In 2,065 garment-workers in whom this observation was made, 103 or very nearly 5 per cent. showed no evidence of previous successful vaccination. In 1,902 workers, or 92.1 per cent., good vaccination scars were present, while 60 individuals, or 2.9 per cent., had been protected by a previous attack of smallpox.

Pulse rate, Blood-pressure and Hemoglobin.—The average pulse frequency observed among garment-workers was

76.8 with the following averages for the several groups: Finishers, 76.12; operators, 76.22; miscellaneous workers, 76.5; pressers, 77.96; cutters, 78.1. In very nearly 80 per cent. of the observations the pulse-rate lay between 60 and 89.

Blood Pressure.—The average systolic blood pressure of 2,066 male garment-workers was 125.66 mm. of hg. The average diasystolic pressure of 2,051 workers was 84.53 mm. The average pulse pressure observed was, therefore, 41.12 mm. This is somewhat in excess of the usual average for pulse pressure which is commonly 25 to 30 mm. The auscultatory method was used in making these observations. The maximum systolic blood pressure observed was 260 mm., the maximum diasystolic pressure, 165 mm. Pressers had the highest average systolic blood pressure of 129.25 mm. Then followed, in order, finishers with 125 mm., operators with 123.4 mm., cutters with 122.3 mm., and miscellaneous workers with 120.1 mm.

Hemoglobin.—In view of the necessity for using some rapid method in determining the percentage of hemoglobin, the Tallqvist scale was used. The scales employed were calibrated by comparing readings made by them against readings with two other forms of hemoglobinometers (Dare's and Gower's). They were found to give readings on an average of 10 per cent. lower than these instruments for values between 80 and 100 per cent. About 10 should therefore be added to the percentages given herewith.

Computed according to the Talqvist scale, the average percentage of hemoglobin of 1,998 male garment-workers in whom this was estimated was 86.79 per cent. The minimum reading found was 65 per cent. In 101 instances, hemoglobin percentages of below 80 were observed.

According to groups, pressers had the highest average percentage of hemoglobin with 87. Miscellaneous workers came next with 86.9, followed in order by operators with 86.8, cutters with 86.7, and finishers with 86. Although pressers had the highest average hemoglobin, percentages below 80 were observed more frequently in this group than in others. This group also furnished the individual with the minimum percentage of hemoglobin observed. It is possible that there may be some relation between the greater frequency of low hemoglobin percentages among pressers and their exposure to carbon monoxid gas from gas-irons. This point is being investigated by the Service.

Development and Nutrition.—While the personal equation of the examiner must influence, to a certain extent, the classification of workers according to the state of their development and nutrition, such observations are not without value.

The following table shows how male garment-workers were classified by the examiners as to the state of their development and nutrition:

Workers.	Development.			Nutrition.		
	Good.	Fair.	Poor.	Good.	Fair.	Poor.
Operators	248	462	255	473	331	161
Pressers	284	299	135	424	215	79
Finishers	45	121	113	117	104	58
Cutters	14	21	13	22	21	5
Miscellaneous	25	30	24	40	24	15
Total	616	933	540	1,076	695	318
Per cent.	29.5	44.6	25.9	51	33.5	15.5

It will be seen from the above table that the state of development among garment-workers, is not on a par with that of the nutrition, a good state of the latter being considerably more frequent than the former. Pressers were the best developed and best nourished class of garment-workers, some of them possessing even magnificent muscular development. Very excellent physical types were also encountered among the operators. 39.5 per cent. and 59.1 per cent. among pressers, 29.2 per cent. and 45.9 per cent. among cutters; 25.7 per cent. and 49 per cent. among operators; 16.1 per cent. and 42 per cent. among finishers presented respectively good development and good nutrition. The finishers, therefore, furnished the most unfavorable comparison with the other groups from the standpoints of development and nutrition.

General Physique of Garment-Workers.—In considering the impressions derived from the examination of garment-workers, it was found the pressers were the most robust from a physical standpoint. The finishers were decidedly inferior to all the others. This is but natural, as the work of the presser requires considerably more muscular energy than that of the workers. The work of operators, too, while calling for no great muscular exertion, requires concentration, alertness, and speed, in order to earn a high wage. The work of the finisher, however, demands these qualities to a much lower degree; therefore, we find in the garment trade, a gravitation of those whose efficiency is low, either by reason of age or physical inferiority to this class of work. This is ample to account for the relatively poorer showing of this class of garment-workers.

Defects of Garment-Workers.—It will be impossible within the limits of this paper to enter into detailed discussion of the defects observed in the course of the investigation. These will be fully described and discussed in the full report of the investigation which will be published later. *I will state, however, that the physical examination developed the presence of no one disease which can be said to be peculiar to garment-workers.* The effect of this trade

upon the health is that of any sedentary occupation, namely, that defects, or neglect of personal hygiene are intensified, in their influence upon the individual by the confining and sedentary nature of the occupation. This industry, in the case of the piece-workers, at least, presents, also, the following unsatisfactory conditions. During the busy season, the workers drive themselves at top-speed, in order to earn as much money as possible, to tide them over the slack seasons, while, during the dull periods, they are without sufficient occupation to keep up their interest. Such conditions are productive of considerable mental stress, the worker, during the busy season, overdriving himself, and spending the slack season in wondering if work will be forthcoming in the future.

This condition of affairs is reflected in the relatively large number of operators found to be distinctly neurasthenic, or of neurasthenic tendency.

The number of physical defects observed in individuals, usually the result of neglect of personal hygiene, was very large. Not over 2 per cent. of the workers examined were free from defects. The average number of defects observed was between 4 and 5 per person. Without entering into details at this time, it should be stated that the majority of these defects were of a correctible nature. Chief among them were chronic catarrhal conditions of the naso-pharynx, defective vision, defective teeth, weak or flat feet.

Tuberculosis was undoubtedly the most serious chronic disease found and was present in about 3 per cent. of those examined. Neglect of the teeth was habitual among garment-workers, and the evil consequences of inattention to this department of personal hygiene were apparent. The average number of efficient teeth in the mouths of garment-workers was but 24.63, which gives a deficiency from normal efficiency per worker of 7.37 teeth, or about 23 per cent. of the number normally present in the mouth. Hernia and varicose veins of the legs seemed especially prevalent among pressers, doubtless due to their standing posture.

As a whole, postures assumed by garment-workers were extremely defective. Yet in those who had had military training in their youth, good postures were relatively common. The effect of this training, therefore, had been permanent. The evil effects of defective postures upon the physical condition are well known, and will not be entered into here.

Suffice it to say, in conclusion, that a large part of the ills suffered by garment-workers, apart from defective eyesight, in the occurrence of which poor shoplighting doubtless plays a part, are due to neglect of personal hygiene. This indicates the importance of instruction in such matters in the curriculum of our public schools. I would also emphasize the necessity for the postural training of children, as well as for regular medical school inspection, and dental school clinics. The beneficial effect of such measures, applied in childhood, may be expected to extend over the lifetime of the individual.

RECENT METHODS OF BACTERIAL AIR ANALYSIS.

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Read before the Laboratory Section, American Public Health Association, Jacksonville, Fla., December 3, 1914.

IN A series of studies on the effect of various barn practices upon the germ content of milk, it fell to the lot of the writer to work upon the problem of the relation between the number of bacteria in stable air and the amount of contamination of the milk by air bacteria. For the past two years considerable time has been given to this problem. The necessary data were gathered from two points of view: (1) that of the effect of the number of bacteria in a known volume of air upon the milk and (2) that of the effect on the milk of the number of bacteria precipitating upon a known area in a definite period of time.

But before attacking the main problem it was thought desirable to test out the methods of bacterial air analysis in vogue, with the result that changes were made in the usual procedures that are believed to be improvements over the current methods. The first results given will be of comparisons obtained with three methods of determining the number of bacteria in a liter of air. Then follow the results of comparisons between two methods of determining the amount of bacterial precipitation occurring on a known area in a definite space of time.

The three methods of filtering air for germ content tested by the writer were the water-filtration method of Rettger,* the sand-filtration method recommended by the "Committee on Standard Methods of Air Analysis of the American Public Health Association,"† and a modification of the latter, devised in this laboratory.

Description of Filters Studied.—Rettger's method is a modification of Miquel's aëroscope. The filtering agent is 5 c.c. of physiological salt solution which is plated in aliquot portions after the air is allowed to bubble through the liquid. The description of the aëroscope may be given in Rettger's own words as follows: "The entire special apparatus consists of a glass tube with a small round bulb at one end (fig. 1). The bulb has eight or ten small perforations which serve the purpose of allowing the air to pass through at a rapid rate and yet divide the gas to such an extent that every particle of it is brought into close contact with the filtering fluid. This glass tube or aëroscope is fitted into a small thick-walled test-tube by means of a rubber stopper, which also bears besides the aëroscope a short glass tube bent at right angles. The upper end of the aëroscope is bent at an angle of about

*L. F. Rettger, "A new and improved method of enumerating air bacteria." Jour. Med. Research, 22: 461–468. 1910.

†Progress report of Committee on Standard Methods for the Examination of Air. Amer. Jour Pub. Health, 3: 78–83. 1913

FIG. 1.

forty-five degrees in order to prevent bacteria and particles of dust from falling into the open end of the tube and still permit of the tube being drawn through the stopper without difficulty."

The standard method is a modification of Petri's sand-filtration method. A layer of fine sand 1 cm. in thickness is supported within a glass tube (fig. 2) 70 mm. in length and 15 mm. in diameter upon a layer of bolting cloth, which in turn is supported by a rubber stopper. Through a perforation in the rubber stopper there passes a tube 6 mm. in diameter and 40 mm. in length. This is the part of the apparatus which is attached to the aspirator bottle. The upper end of the sand filter carries a perforated cork stopper through which passes a tube of the same dimensions as the lower one. This is bent at an angle of 45° to prevent precipitation of dust and bacteria into the tube. The sand is shaken into 10 ccm. of sterile water and aliquot portions of this plated on nutrient agar.

FIG. 2.

The modification of this method (fig. 3) previously mentioned differs

FIG. 3.

from the standard tube in no way except that the lower rubber stopper and the bolting cloth supports are eliminated and the small tube is fused into the larger one, while the upper rubber stopper is replaced by one of cork. The layer of sand is supported by a layer of cotton resting on the shoulder at the junction of the large and small tubes. This tube is very similar to

the one used by Koning* in 1906 though he used much coarser sand. As far as the writer knows, this form of aëroscope has never been employed by others.

I. Comparison of Results with Three Methods of Filtering Air.

The filtering efficiency of the aëroscopes was determined by setting them up in tandem so that the air could be drawn through both of the filters. From the number of bacteria found in each of the tubes it was a simple matter to calculate the efficiency of the filters, since the number of bacteria in the second tube represented the proportion of the whole number not caught by the first tube. Great care had to be taken to prevent leakage about the joints between the two aëroscopes. In addition to these efficiency tests, experiments were also carried out in another way. These consisted of comparisons between the numbers of bacteria obtained by each method, when the aëroscopes were set up side by side, equal amounts of air being drawn through each filter in equal periods of time. These two types of tests were carried out for the most part simultaneously, but for the sake of convenience, the results of the percentage efficiency tests will be discussed first and then the results of the comparative tests. All of the figures given are from averages of from 20 to 25 tests except one which included only nine tests. The results of all the work on the filter tubes cannot be given here, but only general summaries of the most instructive tests. Anyone especially interested will find the details in a Bulletin of the New York Agricultural Experiment Station soon to be issued.

The highest average filtering efficiency obtained by the use of the standard sand filter in any series was 92 per cent. and the lowest average for a series was 90 per cent. Individual cases varied between wide extremes. Sometimes the filter seemed to be 100 per cent. efficient, at others it was as low as 50 per cent.

The Rettger filter tubes gave somewhat higher results, the lowest efficiency for a series being 93 per cent. and the highest 97 per cent. Individual results also varied considerably.

No such great individual variations occurred when using the modified sand filters. The lowest filtering efficiency obtained with this filter tube was 96 per cent. and the highest 99 per cent. for a series of tests. The numbers obtained in the second tube were always low, usually so low that there was often doubt as to whether the results did not represent unavoidable contamination during the plating process rather than inability of the sand in the first tube to retain the bacteria.

The results of the counts obtained by comparing the three filters side by side can be given very briefly. The first results obtained with either of the sand filters in comparison with the water filter were largely in favor of the sand filter. Later results, however, showed that just as high counts could be obtained with the Rettger aëroscope

*C. J. Koning. "Biologische und biochemische Studien über Milch." Milchwirtshaftliches Zentralblatt 2: 241–263, 313–338. 1906.

as with the sand filter, provided great care was taken before plating to wash out the inner surface of the long tube through which the air passes before entering the liquid. This was done in the later work, but not done in the earlier. Hence the difference in the results.

It seems fairly evident from the foregoing data, that good results may be obtained with either a sand filter or a water filter when sufficient care is exercised to prevent leakage and other sources of error.

The principal trouble with the Rettger aëroscope is due to the difficulty of sterilizing the apparatus without causing it to leak. The rubber stoppers lose their elasticity and become loose about the inner tubes when heated in the autoclave. Another difficulty is the tendency of the physiological salt solution to foam. This foaming may cause the liquid to become contaminated from the connections leading to the aspirator bottle.

The standard filter tube is also affected by steam sterilization. In fact its chief source of error is due to the necessity of sterilizing it by steam, which causes the sand to cake. Caked sand is not an efficient filtering agent because of cracks or lanes through which the bacteria can go as readily as through the air. Even when not caked sufficiently to be noticeable to the eye, the sand grains are apt to cling together when moist, making the spaces between them larger. This reduces the filtering effectiveness of the sand. Besides the effect on the sand, steam sterilization here again is apt to cause leakage about the rubber stoppers.

The modified sand filter presents none of these difficulties, since it may be sterilized by dry heat, and therefore is much more reliable. It is certainly much safer in the hands of a novice, as well as cheaper and easier to operate, than either of the other two filters.

II. Comparison of Results with Two Methods of Measuring Bacterial Precipitation.

As stated earlier in this paper, it was found to be necessary to know the number of bacteria settling upon a given area in a definite period of time. No standard method is recognized at present for attaining this end. It seems evident that there ought to be a recognized standard procedure. This determination is usually made by exposing a petri plate containing agar or gelatin for a given period of time and then counting the colonies which develop on the plate. It was felt, however, that this method could not give a true measure of the number of bacteria precipitated from the air, since it takes no account of the possibility of more than one bacterium being associated with a single dust particle. Ordinarily only one colony will develop when a bacteria-laden dust particle falls upon the surface of the medium in the plate. Some method should be used which will permit each individual bacterium to develop into a colony and thus to be counted. Such a method has been used by Koning* in 1906 and by the writer recently.

* Loc. cit.

Koning exposed dishes containing sterile milk for one hour to the stable air and determined the amount of precipitation by analyzing the milk. In the present work 500 ccm. of water was sterilized in a pail, which was covered with a metal lid until ready for use. After five minutes' exposure to stable air, the number of bacteria in the water was determined after thorough agitation.

Thirty-four comparisons between the results obtained by this method and the plate exposure method were made. The average of the results obtained by the plate exposure method was 8 colonies per square centimeter during a five-minute exposure. By the pail method, the average was 78 colonies for the same period of time. This is in the ratio of 1:10. This ratio did not hold, however, between individual cases—they varied all the way from ratios of 1:2 to 1:32. It is fairly evident, therefore, that the plate exposure method is inadequate for measuring bacterial precipitation. As a matter of fact it is more probably a fairly accurate measure of the number of bacteria-laden dust particles precipitating from the air. This criticism of the plate exposure method applies as well to other methods of enumerating bacteria in air that depend upon the principle of precipitation.

Conclusion.

From the foregoing data it seems evident (1) that the modification of the sand filter described herein is an improvement over both the standard sand filter and the water filter of Rettger, and (2) that the method of determining the amount of bacterial precipitation from the air as carried out in the present work gives more accurate results than the plate exposure method.

THE STATISTICAL TREATMENT OF STILL-BIRTHS.

DR. FREDERIC V. BEITLER,
Chief, Bureau of Vital Statistics, Maryland State Department of Health.

Read before the Vital Statistics Section of the American Public Health Association, Jacksonville, Fla., December 1, 1914.

THE need for a proper definition of the term "still-born child" is evidenced by the discussion which has been given it both in the United States and Europe. Dr. Reginald Dudfield* in his excellent paper on this subject has gathered the definitions and methods of registration of still-births now in use throughout the world, and it is a noteworthy fact that, in all the data collected by Doctor Dudfield and his committee, there was no example of a legislative definition of the term "still-born child." Most of the definitions in use in the various countries were expressed in regulations which were drafted by registration officers.

We no sooner attempt to define this term than we are thrown into conflict with the definition of words, precedent and practice in different localities, and technical questions of law and medicine. We must bear in mind, when trying to formulate such a definition, that it must meet the purposes of practical registration. The very first requisite of a sound discussion is adequate consideration of the data which registrars of vital statistics are expected to collect. In general, the broader the definition the more valuable it will prove. It has been argued that a broad definition would involve certain difficulties in obtaining complete registration, but this is the argument of incompleteness, inseparable from every discussion, and I do not feel that this would be as great a consideration as the loss of statistical material under a restricted definition.

To define the term "still-born child" we would have to include:

(a) The definition of the word child.

(b) The age or period of gestation of products of conception which should be included under the term "still-born child."

(c) The signs or tests for the determination of life.

(a) Since the majority of all legislative enactments relating to the registration of vital statistics in the United States refer to a still-birth as a still-born child, it is necessary for us to make the clear meaning of the word child.

The true root of the word child is *kilth*, seen in Gothic, *kilthei*, womb, an origin which appears in the expressions "childbirth" or "to be with child." Literally, then, the root of this word indicates that it could be applied to products of conception at any period of gestation. Although it has, by precedent, been considered to include human offspring below the age of puberty, there is no legal authority limiting its application at the other

* Journal of the Royal Statistical Society, December, 1912.

end of the scale to fertilizations which have reached certain periods of gestation. Considerable confusion has been caused by the medical profession referring to an immature child as an embryo or a fœtus. These terms are used indiscriminately by physicians and in text-books, and this narrow technical practice will certainly give ground for restrictive legal argument unless forestalled by a proper definition of the term "still-born child."

I have brought to trial, recently, a physician, for neglecting to report a 4½-months' still-born child, whose lawyer at the trial did not deny the fact that a certificate of birth and a certificate of death should be filed for each still-born child, but argued to the magistrate that a product of conception of 4½ months' gestation was not a child but a fœtus. He brought as evidence four other physicians who testified that any product of conception was an embryo up to 3½ months, a fœtus from 3½ months to 7 months and a child from 7 months to date of birth. The magistrate, after our argument, was convinced that there was no reason for arbitrary divisions of the life of intrauterine products of conception, and held the view that if a 7 months' product of conception was a child, a 4½ months' product, would also be a child.

It seems paradoxical for professional men, to whom the law looks for enlightenment, to try to make clear that a child of 3 to 4 months' utero-gestation is an embryo, from the 4th to 7th month a fœtus, and from the 7th to 9th month a child. A little greater sacrifice of sense would be involved in the statement that to the 3d or 4th month a mother conceives a pig, from the 4th to the 7th month a horse, and from the 7th to the 9th month a child. The word child, in the laws relating to vital statistics, should include all products of human conception.

(b) The age-period of products of conception which should be included under the term "still-born child" has never been established by legislative enactment. The definition of the word child would relieve us of such discussion, if we should leave out of consideration the value and practicability of the registration of all data relating to still-births. There can be no doubt that statistics of the causes of antenatal deaths are needed to aid in the prevention of 50 per cent. of the infantile mortality in the first two months of extrauterine life; and we cannot hope to reach accurate conclusions, if we arbitrarily establish an age-period, and neglect all still-births occurring prior to that period. From the knowledge which I have been able to obtain, it would appear that the most valuable statistical material will be that gathered from the reports of still-births between the second and third months of gestation, particularly that information which would throw light upon sterility, for it is in this period that the majority of still-births occur.

From its relation to the criminal law, the adoption of a stated "period of gestation" or "length of child"* would be very embarrassing, on ac-

*Suggested by the Special Committee appointed by the Council of the Royal Statistical Society. Vol. LXXVI. Part 1.

count of the large field in which it would allow abortionists to practice. It is no easy matter to obtain evidence sufficient to warrant proceedings against an abortionist. If we require the registration of all products of conception, we should be able to institute proceedings for violations of the registration act. On the other hand, if we adopt a stated "period of gestation" or "length of child," almost any one who is accused could establish his innocence by the plea that the child was not of such age or such length as the statute specifies. It is common knowledge among physicians and midwives that most mothers can only give approximately the date of the last menstruation, and many women menstruate so irregularly that one must take a latitude of 2 to 4 weeks in calculating gestation periods. These uncertainties give a large and unfair advantage to violators. A definition which would not allow the state registrar to demand the registration of all still-born children cannot be considered fair to the best purposes of registration.

(c) The signs or tests for the determination of life should in all essentials be practicable. A child is considered born at the end of the second stage of labor after complete expulsion. This meets the legal interpretation of the term "to be born." It also meets the difficulty of breech and other irregular presentations, and permits the observation of the signs and tests for life at a time when the physician or midwife, in the performance of duty, will always take pains to note the facts.

The signs or tests for the determination of life are in the order of their accuracy as follows:

(1) Heart-beat.

(2) Attempts at respiration.

(3) Movements of the limbs.

The heart-beat, while the most accurate test of life, has the disadvantage of being at the same time impracticable, particularly in countries and states in which a large proportion of births are attended by untutored midwives. The only manner in which this test can be properly made is by auscultation with a stethoscope which would exclude the application of this test by persons not acquainted with its use. The other tests for heart-beat, such as pulsation of the cord or arteries, is *per se* not accurate since a very weak heart-beat does not convey a perceptible pulsation to the cord or arteries. Among midwives, at least, I do not consider the heart-beat a practical test for life, and I am sure that, if a child does not make attempts at respiration immediately after birth, the physician will devote all his time to induce respiration, and if he auscultates the heart at all it will be after a considerable time has elapsed; so long a time perhaps that the heart-beat, if it had been present, will have ceased.

In the state of Maryland there are 1,190 midwives, of whom there are licensed and registered 273 white and 408 colored. I am confident that not more than one per cent. are capable, at present, to auscultate the heart. Very few have adequate equipment to attend normal cases of labor, and to my knowledge, not a single one possesses a stethoscope. Of the total white

births reported during the year 1913 in the state of Maryland, exclusive of Baltimore City, 15.57 per cent. were attended by midwives. Of the total colored births reported during the same year, 58.91 per cent. were attended by midwives. Of the total births reported, 23.05 per cent. were reported by midwives.

Attempts at respiration have always been used by the majority of physicians and all midwives as the decisive fact in distinguishing live from still-born children. It is almost impossible to mistake other muscular movements for respiratory movements and they are equally evident to any or all persons in attendance at the birth of a child. From the standpoint of practicability, this sign of life, which needs no special training to observe, and to which the attention of the accoucheur is directed from the instant the child is born, would be the first choice among all signs or tests of the existence of life in new-born children. It is not as accurate a test as the heart-beat, discerned by skilled persons at the moment of birth; but on the other hand, only a limited number of the persons who are capable of doing so would auscultate the heart at this time, and a number equally as large would not be qualified to do so.

Movements of the limbs cannot be regarded as a good sign of life in any sense of the word, and is of so little importance as to warrant little discussion. However, attention should be called to the frequent apparent movements of still-born children caused by change of position of the mother, etc., which would certainly be interpreted by midwives as movements of the limbs. It would be safer to disregard all such movements in determining the presence of life.

Definition.

From the foregoing discussion we might propose to define the term "still-born child," as including any product of human gestation which can be recognized as such, which, after birth (complete delivery of the entire child, but not necessarily of the cord or after-birth) does not breathe.

The term "still-born child," as used in the model law, and practically all registration laws in the United States, admits such a broad definition. In order to obtain a legal opinion of the scope of the term as it is now used, I requested a definition from the Attorney-General of the state of Maryland* who replied as follows:

"I have yours of the 2d in which you ask me to advise you as to the proper meaning of still-born children as used in Section 9 of Chapter 696 of the Acts of 1912. The latter part of said section provides that wherever a child is still-born the medical certificate of the cause of death shall state in case of a premature birth, the period of uterine gestation in months, if known. From this it is very evident that the term still-born should be interpreted as representing every product of human gestation that could be distinguished as such and that the view, therefore, of your Department is correct." †

If our legislators have given the opportunity to obtain registration of

* Hon. Edgar Allan Poe.

† Definition applies also to term as used in model law.

all still-births, it would be a great sacrifice, wherever the model law or one similar exists, to have to adopt, for the sake of uniformity, a "gestation period" or "length of child" criterion in a definition of the term "still-born child."

Relation of Antenatal Mortality to Postnatal Mortality.

It is impossible to obtain accurate figures from which to derive the ratios of living to still-born children, though there are several estimates which will give an approximate idea of the frequency of still-births. The most interesting estimate is that constructed by Karl Pearson in his essay on "The Chances of Death."

Pearson tried to fit to the mortality distribution in childhood a theoretical frequency curve, but found upon further study that to solve the problem two points must be borne in mind. First, that there is a mortality of childhood quite distinct from that of infancy; and secondly, the mortality of infancy must, at least in theory, be extended into the antenatal period to a distance which is approximately nine months. There can be little doubt about the approximate accuracy of this curve, since at points where the theoretical figures used in its construction can be compared with actual figures of mortality distribution they correspond very closely. For instance, the total prenatal mortality = 246, theoretically the curve gives 245.7. In the first year of life we have statistically 158.5 and theoretically 156.2 deaths, and in the second year of life statistically 51.2, and theoretically 53.5 deaths.

Pearson's estimates for antenatal deaths are given in terms of live-born children—*i. e.*, for every 1,000 live births, there are in the first 3 months of intrauterine life 391 deaths, in the second three months of intrauterine life, 131 deaths, and in the third 3 months, 83 deaths, totaling 605 still-births, or, more accurately, 605 deaths before the proper birthday. If, for convenience, these figures were subdivided into monthly periods we should have approximately, 1st month, 195.3; 2d month, 118.7; 3d month, 77.0; 4th month, 52.7; 5th month, 43.2; 6th month, 35.6; 7th month, 31.2; 8th month, 27.5; and 9th month, 23.8.* A progressive decrease in antenatal deaths from the 1st to the 9th month of the gestation period.

Another estimate of more recent date is that of Dr. Franklin P. Mall, Professor of Anatomy at Johns Hopkins Medical School, who for a number of years has been collecting embryological material for studies upon the development of the human embryo, and who has an excellent opportunity to make observations upon the frequency of still-births. Doctor Mall originally estimated that the frequency of still-births is one-third the number of live births, but the closer his observation the more confident he is that the incidence of still-births is at least one-half the total number of live births. That is, for every 1,000 live-born children there are at least 500 born dead.

If these estimates approach the

*Dr. John S. Fulton. The Necessity for Minute Study of the Age-Incidence of Causes of Infant Mortality.

truth, we can see without further discussion the need for more detailed knowledge which will enable us to ascertain the real causes of antenatal mortality, to obtain the exact numbers of deaths from these causes, and to classify them in a manner similar to postnatal causes of death.

We must also bear in mind the relation which the causes of prenatal death bear to the high death-rate in the first month of postnatal life. We have seen by the figures of Karl Pearson that at the 9th month of pregnancy we can expect a death-rate of 23.23 per thousand of all gestations. The fact that a child is born alive does not by any means indicate that it has been relieved of antenatal influences. Experience teaches us that frequently the child survives its antenatal period with great difficulty, and is brought into life so handicapped, in many instances, as to succumb after a few hours or days of extrauterine existence.

It is interesting to study, from the meager data which I have, the relation of antenatal causes of death upon the mortality figures in the 1st month of extrauterine life. Projecting the figures of Karl Pearson into the 1st month of postnatal life, we should have about 20 deaths per thousand children born, due to prenatal causes.

Using the mortality figures of the Registrar-General of England and Wales, we find grouped, under items 150, 151 and 152 of the International Classification, chiefly those deaths (congenital debility, congenital malformation, etc.) which the attending physicians had to attribute, in great measure, to prenatal influences. The death-rate per thousand of live births from these causes was 29.87, constituting 50 per cent. of the total mortality in the first month of life. There is a difference of 9.7 between the estimate from Pearson's figures and that from the report of the Registrar-General, but the difference would be smaller if we could make proper adjustment for errors in classification and diagnosis.

While there are no accurate figures in the United States giving the deaths in the first few months of life in terms of live births, we may give some interesting figures from the Mortality Bulletin of the Census Bureau* for the year 1910. During this year there were in the registration area of the United States 154,373 deaths under one year, constituting 19.19 per cent. of total mortality. Of this number of deaths there occurred as follows:

	Total deaths.	Deaths classified under 150, 151 and 152.	Per cent. of total deaths in age-periods.
Deaths under 1 day,	14,946.	12,252	81 98
Deaths, 1 day,	7,505	5,865	76 81
Deaths, 2 days,	4,453	2,966	66 60
Deaths, 3 days,	3,359	2,076	61 80
Deaths under 1 month,	58,089	35,672	61 40

These figures give an idea of the proportion of deaths in early life, which are dependent, in a majority of instances, on antenatal causes. It is not necessary to complete this table since the figures already given are

*Mortality Bulletin, 1910.

ample, and it would be impossible to separate the mortality figures of early childhood, which become more manifest each succeeding month. I do not think, however, there is much doubt that antenatal influences are clearly traceable in the mortality rates in the age periods of 0–1 year and 1–2 years.

It is my opinion that too little attention has been given this subject. Looking at it merely from the standpoint of registration we have been too insistent upon an easy method of registration, and have greatly underestimated the value of a record of still-births and their causes. As a matter of fact, the problem presents a number of interesting phases, first, its ever increasing relation to the birth-rate; second, its great reflection in the death-rate of the first and second years of life; and third, the alliance of the causes of still-births with those of sterility.

The time has come when the American Public Health Association must adopt some definition of the term "still-born child." The way is open for the adoption of a broad definition which will serve the best purposes of registration, particularly, that leading to knowledge which tends to add to the health and happiness of the state.

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INDUSTRIAL HYGIENE.

At this year's session of the California legislature the workmen's compensation law was amended so as to include occupational diseases as well as accidents. Victims of such maladies are already compensated under the Massachusetts law and it is probable that within a few years the great stretches of the continent between these two leading states will be covered by legislation providing occupational disease indemnity. The Kern-McGillicuddy bill in the United States Congress, designed to extend this relief to the 400,000 employees of the federal government, has been favorably reported. And all of this is in line with practical experience under the earlier laws of England.

But progress here in occupational disease legislation presents many problems. Which of several recent employers, for example, is to be held responsible for a serious case of painter's colic? How is the trade unionist's prejudice against

physical examination to be met? How shall the "physician problem" be handled where the occupational cause of the personal injury must almost universally be determined by expert opinion? How many public health officials are well informed concerning the relation of occupation to disease in their own communities?

That the occupational disease problem is not an unimportant one we may judge from the fact that considering the industrial poisons alone we find already prepared a comparative list of fifty-four, one of which, lead, is in daily use in more than one hundred and fifty trades. Connected with dusty trades of all sorts are found both poisonous and non-poisonous materials which by infiltration and mechanical irritation produce, for example, various lung diseases. The tunnel and caisson worker faces compressed air illness; the hatter dreads the "shakes"; tanners and workers on hair goods are in danger of the anthrax bacillus. Less easy to trace but more wide-spread, are the obscure ailments which may arise in any industry, from insufficient or excessive lighting, from extremes of heat, cold and humidity, or from work too heavy, too persistent and too intense without adequate periods of rest.

Fortunately, in recent years in America, there has been a growing interest in the subject of industrial hygiene. Investigations have been made, conferences held, reports published, legislation prepared. And one of the most significant new developments of this year will be the first meeting of the Industrial Hygiene section of the American Public Health Association, at Rochester in September. The proceedings of that meeting will be watched with special interest as indicating whether the members of the Association appreciate the importance of the problem and whether they fully realize their duties in this matter.

MASSACHUSETTS CONFERENCE OF HEALTH OFFICIALS.

A convention of health officials, and others interested in public health, was held at Ford Hall, Boston, Thursday, April 29, under the auspices of the Commissioner and Council of the State Department of Health and the Massachusetts Association of Boards of Health, in connection with the quarterly meeting of the Association.

Dr. Allan J. McLaughlin, Commissioner of Health, presided at the morning session.

The following cities and towns were recorded as represented at the conference: Arlington, Barnstable, Belmont, Beverly, Boston, Braintree, Brockton, Brookline, Cambridge, Canton, Chelsea, Chicopee, Clinton, Cohasset, Concord, Duxbury, East Bridgewater, Everett, Fall River, Fitchburg, Framingham, Gardner, Gloucester, Haverhill, Holyoke, Hopedale, Lawrence, Lee, Leominster, Lowell, Lynn, Malden, Mansfield, Marblehead, Medway, Medford, Melrose, Needham, New Bedford, Newburyport, Newton, North Adams, North Attleboro, Norwood, Orange, Quincy, Revere, Rockland, Rutland, Salem, Salisbury, Shrewsbury, Somerville, Springfield, Swampscott, Taunton, Walpole, Waltham, Warren, Watertown, Webster, Wellesley, West Boylston, Westboro, Weston, Winchendon, Winchester, Winthrop, Woburn, Worcester, Yarmouth.

The chairman then introduced His Excellency, Governor David I. Walsh, who delivered the address of welcome.

ADDRESS OF WELCOME.

HON. DAVID I. WALSH,
Governor of Massachusetts.

Because the public health is the foundation upon which rests the happiness of the people and the welfare of the state, I feel that the Commonwealth is to be congratulated this morning upon the gathering together of so many active workers in the field of health conservation.

If there has been any one governmental problem in which I have been more vitally interested than any other it is that of preserving the public health. My interest in this problem has been actuated largely by a realization of the importance of having the government assist in reducing to a minimum the misery, distress, suffering and waste caused by disease and death. I have been ambitious—intensely so—that my service to the Commonwealth of Massachusetts might be remembered, long after I am removed from it, for the progress and advancement of our health organization and for the encouragement of the efforts of those unselfishly devoted to the public health.

I deem it a special pleasure, therefore, to have a part in welcoming the public health officials of the various municipalities and also the many public-spirited citizens who are devoted to this cause and have long appreciated its importance. We are making history here today. No gathering like this has ever before taken place in Massachusetts, and its possibilities cannot be estimated or measured.

Sanitary science has, to a great extent, within our lifetime overcome the former ignorance of the causes of

disease and of the most effective means for their prevention. We in Massachusetts are entitled to congratulate ourselves upon our share in applying to the common advantage the great discoveries of modern sanitary science. We do not, however, forget that much remains to be done and that we should be false to ourselves and to coming generations if we did not ever press on toward new achievements in the conquest of disease.

To illustrate the field which is still before us to be explored and the progress which you may still hope by faithful efforts to attain, permit me to call to your attention a few facts gathered from the death records of Massachusetts in the year 1913. A fact which stands out in startling prominence is that of the 53,286 deaths which occurred in that year no less than 13,661 were of children under five years of age. While we do not forget that infant mortality has been greatly reduced by the progress of sanitary science in recent years, is it not evident that this proportion is even yet frightfully high, and that we should bend every effort for a still greater reduction of this terrible infant mortality? Education of mothers in matters pertaining to infant hygiene is evidently the one need of the hour, which is of more importance from the health standpoint than any other. I trust that the enthusiasm generated in this meeting may reach out into the entire Commonwealth and may be reflected in the health and happiness of many a household.

I am especially glad of the opportunity which this gathering affords of bringing the workers for public health throughout the Commonwealth into closer contact with our State Health Department, of which, in its present condition, the Commonwealth of Massachusetts may well be proud. To be in the highest degree successful the ablest department of health must have the earnest coöperation and good will of the local officers and boards of health. I commend to you most heartily Doctor McLaughlin, the Commissioner, his eminent Public Health Council, and all their co-workers and subordinates. This is a field of work in which party lines have no place, political distinctions may be forgotten, and all may work heartily together for a common end, the good of humanity.

As we survey the field we must note that while some diseases, such as diphtheria and typhoid fever, have decreased to a marked extent in recent years, and the deaths from tuberculosis even are less numerous than they were ten years ago, there is still much room for improvement even in these respects, while there are other diseases whose destructiveness appears to be upon the increase. This is the case notably with pneumonia, the number of deaths from which has been growing annually for several years. The same is true of the so-called wear-and-tear diseases of middle life, diseases of the heart and blood vessels, and of the kidneys and the brain, and also of the scourge of cancer. The mortality from these ills is evidently excessive, and the problem of reducing it is at present even more pressing than that presented by the communicable diseases.

The New York Health Commissioner in his last annual report has declared his conviction that it is possible by proper sanitary precautions to add at least five years to the lifetime of each individual who has reached the age of forty-five. His opinion must make a profound impression upon us all when we think what it would mean to the Commonwealth were five years of service added to the lives of the distinguished and useful fellow citizens, whose premature death from some of these diseases we have so often occasion to lament. I will not trench, however, upon the province of the eminent specialists who will address you upon the specific measures which are to be taken into consideration in combating the ever-present and insidious enemies of the public health; I wish only to impress upon you that upon your individual activities in your own local spheres of influence, upon your zeal and faithfulness in imparting to your neighbors the saving knowledge which has been gathered by the scientists of today, is dependent very largely the sanitary education of the entire citizenship and the general prolongation of life and happiness which is our common aim. You must bend your best efforts to the enlightenment of the people in these vital matters. The Commonwealth relies upon you for this service, and I believe that this reliance is well placed and will be justified by your increased devotion and enthusiasm during the coming year, as a result of this important gathering, which I consider one of the most significant events of the present year.

Papers were then read in the following order:

THE MAIN POINTS OF ATTACK IN THE CAMPAIGN FOR PUBLIC HEALTH.

Dr. Charles W. Eliot,
President Emeritus of Harvard University.

THE progress in knowledge of preventive medicine made during the past fifty years, and in applications of that knowledge in social practice, has been the most cheerful phenomenon in the recent history of civilization. The new applications of physical forces—heat, light, and electricity, which mankind has learned to use in its conflict with nature—have proved to be highly beneficent in the field of preventive medicine. Civilized communities have been enabled to make their water supplies, food supplies, and drainage systems safe, and to contend with unexampled success against formidable pestilences, the common communicable diseases, and the bodily ills which attend urban life and the factory system. In Massachusetts the organization of the public health service has, within ten years, been made for the first time thoroughly efficient; and the State Department of Health has lately been much strengthened through pub-

lic appreciation of its beneficent work, and the coöperative good will of the legislature and the executive.

Great as recent progress has been in Massachusetts in this invaluable branch of the public service, it is obvious that much more remains to be done; and I hope on this fortunate occasion to be able to set before this professional audience certain lines of work in which there is urgent need of more strenuous medical activity, of more expenditure on the part of the public, and of more well-informed zeal on the part of all persons interested in the welfare of the community.

The first subject to which I venture to direct your attention is the public treatment of tuberculosis. All boards of health—we just listened to a long list of Massachusetts boards of health apparently in abeyance—all boards of health should concern themselves actively with making ample provision all over the state for the treatment of incipient cases of tuberculosis, especially among the young, under the most favorable possible conditions, for the segregation of advanced cases, and for the diffusion among the entire population of knowledge of the means of preventing the spread of the disease through contagion. The contagiousness of tuberculosis has been widely taught for a generation past; but that knowledge has not penetrated to every class of the population; so that foci of infection are constantly established and maintained without the knowledge of the health authorities, and without adequate public control. On the other hand, there is danger that some tuberculous patients may suffer from lack of care; because the persons around them, acquainted with the contagiousness of the disease, but not knowing how to make themselves safe, neglect or avoid the sufferers. It should be the duty of medical practitioners not only to report the deaths from tuberculosis, but to report their current cases, together with a statement that each case is, or is not, properly cared for. The law on this subject is sufficient; but public opinion does not yet compel its systematic enforcement. The number of sanitaria and hospitals devoted to tuberculosis is already considerable, but is far too small; and the local boards of health and the city and town governments are not all awake to their responsibilities and duties on this subject.

The next evil which should be attacked with the utmost vigor by all boards of health is alcoholism. Public opinion needs to be enlightened on two points with regard to the use of alcohol as a beverage. In the first place, it should be brought home to the entire population that the habitual use of alcoholic beverages reduces, in a serious degree, the productive efficiency of the community. The recent public proceedings in Russia, France, and England against the use of alcohol, in order to enhance the efficiency of their population in time of war, have directed public attention to this subject with unusual force. It clearly appears that the great masses of grains and other materials used in the preparation of alcoholic drinks

are much worse than wasted, so far as national efficiency is concerned. Millions of tons of grains, hops, and grapes are every year withdrawn from use as human food, and converted into drinks which are not only not nourishing, but distinctly injurious to the human body under all circumstances, unless largely diluted. The entire annual bill of the white race for alcoholic drinks is worse than wasted expenditure; and that bill is huge in every European and American nation. In the second place, recent experiments on the effects of alcohol on the nerves and glands of the human body have demonstrated beyond a doubt that alcohol invariably does harm, and never any good either in health or disease. The use of alcohol as a defense against exposure or fatigue has been given up by all sensible persons. It diminishes the proper control of the nervous system over the rest of the body, and enfeebles that exercise of the will which we call self-control. The habitual use of alcohol is the prolific source of a great variety of diseases and disabilities in the human body, causes many frightful disasters in human reproduction, and contributes to produce in innumerable instances family poverty and distress. Degradation through the use of alcohol is the greatest evil the white race is suffering from; and the evil has not diminished during the last three centuries because of the facile production on an immense scale of cheap spirits distilled from grains and potatoes.

This evil is rooted, first, in what are called vested interests,—that is, in the investment of large amounts of capital in the plants which produce, store, and distribute beers, wines, and spirits, and, secondly, in the methods of taxation to which the white nations are accustomed. Heretofore the medical profession and the public health officers have given an uncertain sound concerning the use of alcohol. Many physicians themselves use alcohol habitually or in emergencies, and not infrequently advise its use in both sickness and health and in advanced age. Boards of health have not considered it their function to interfere with, or protest against, its use; and most public authorities have declined to interfere effectively with the distribution and consumption of alcoholic beverages. The efforts of legislatures and courts to prevent even the most obvious abuses of alcoholic drinks have, as a rule, been well-nigh futile. Indeed, the habitual action of police authorities and courts in dealing with habitual drunkards cannot be surpassed in stupidity and inefficiency. Arrest is followed by a period of confinement too brief for cure or reformation; a few weeks of abused liberty follow discharge, and then the hopeless round begins again.

It remains for the boards of health to attack this hideous evil with the weapons and in the spirit of preventive medicine. They should bring to the work all recent knowledge concerning the effects of alcohol on the human body, call to their aid legislators who can find equivalents for the public revenue now derived from the manufacture and sale of alcoholic drinks, and reënforce to the utmost the wise counsellors who by moral teachings have brought about during the past

fifty years considerable improvements in regard to the use of alcohol in the more intelligent and conscientious classes.

The next subject to which boards of health should direct their activities is the cure and limitation of venereal diseases. These diseases are the worst which afflict the human race in their effects on the individual sufferer, on the community of today, and on its posterity. They are, in the first instance, the result of lust in men; but they can be communicated to innocent persons and to generations yet unborn. There are no trustworthy statistics concerning the prevalence of these diseases among persons who are apparently in health, such statistics as exist being generally founded on observation of persons not in health, such as hospital patients and the men and women who resort to outpatient departments and dispensaries, because they are in some way suffering. The dreadful military and naval statistics are trustworthy; but they relate to a class of men who live under unnatural and unfavorable conditions. It is certain, however, that the venereal diseases prevail in the community as a whole—sick and well—to a formidable degree, and that they frequently complicate other disorders. Recent discoveries have furnished valuable tests for the presence or absence of these diseases in the human body, and have also supplied the medical profession with means of probable cure, prompter and more effective than any previous generation of physicians has possessed. Moreover, various other diseases or disabilities to which the human body is liable, such as general paresis, locomotor ataxia, insanity, and blindness, have been traced to one or other of the venereal diseases, not as an exclusive cause, but as a common cause.

Under these new circumstances, the former neglect of these diseases and the former silence about them have become no longer justifiable. It is quite as much an object for the health authorities of a modern state to search out, register, and treat the cases of venereal disease, as to detect and treat, if need be at public expense, cases of scarlet fever, diphtheria, typhoid fever, or smallpox. The interest of the community in the segregation and treatment of venereal diseases is quite as strong as its interest in the effective treatment of any other of the communicable diseases; indeed, it is even stronger, because of the persistence and destructiveness of the venereal diseases and of their transmissibility to other generations.

An inevitable part of this subject is society's treatment of prostitution. Recent inquiries have demonstrated that more than half of the prostitutes in a modern city, or a rural community, are likely to be feeble-minded women. The effective confinement of feeble-minded women, at least till they are past child-bearing, is, therefore, an indispensable part of the restriction of prostitution and the limitation of venereal disease. Here is an important field of labor for all boards of health and particularly for every state board of health. The public mind and conscience need much enlightening and arousing on this sub-

ject. In order to obtain the best results, the coöperation of the family, the physician, the church, and the board of health is necessary. Within the past four years much valuable experience has been acquired concerning the police suppression of prostitution. It has been proved that an honest police force, under the direction of a right-minded commissioner or chief, can suppress public or semi-public brothels, and make it difficult for a casual inquirer to find a prostitute. It has been proved, moreover, that this suppression diminishes the accessibility and the amount of sexual vice, and therefore the profits of commercialized vice, much as alcoholism is diminished by the absence of saloons. Of course, under such circumstances this vice is more or less scattered, and driven to new resorts and devices; but there are also new methods by which the new shelters or channels for vice can be successfully attacked one after another as they develop, with such coöperation as large employing corporations, owners of hotels and apartment houses, the post-office and the telephone companies, and the numerous people who are interested in the protection of the neighborhoods in which they live can readily supply. In view of the facts brought out by commissions of inquiry and the police forces of large cities within the past four years, it is impossible longer to maintain that the suppression of public vice resorts does more harm than good. As to the toleration of licensed, faintly regulated quarters for vice, it has been abundantly proved in Europe, Asia, and America that there has never been either effective segregation or effective regulation; and that this ancient policy has no value whatever.

It is for the boards of health, in coöperation with the medical profession and the courts, to apply to these scourges the principles of preventive medicine. It is also highly desirable that philanthropic and religious efforts should take a new direction, and that such bodies should use all their forces to prevent boys and girls, or young men and young women, from falling into sin and wretchedness through ignorance. The right giving of the needed information to young people requires knowledge of the subject in parents, teachers, and the leaders of young people in churches, clubs, Christian Associations, and social gatherings. It is a work requiring delicacy and reserve, and good judgment concerning time, place and company; but it is indispensible work in which the medical profession and the boards of health ought to take active and serious part.

These two extreme evils—alcoholism and prostitution—are almost always found in close association. In defense of the community, boards of health, licensing boards, and the police need to deal with them, as a rule in their natural conjunction. To disassociate them is to enfeeble both. The assistance of responsible real-property owners is highly desirable, and is often to be had. This conjunction of liquor-selling with vice, however, presents to city and town authorities one of the most difficult of their problems. Whatever success

is gained in dealing with the evil of alcoholism—and some success has already been gained and more is in sight—will bear fruit at once in the diminution of sexual vice.

It is clear that total abstinence from alcoholic drinks is far the safest course for adolescents and young people; because alcohol, even in small quantities occasionally, is liable to diminish self-control under sudden temptation. The responsibility of physicians and boards of health in regard to the advice they give to young people on these matters is heavy indeed; and so is their responsibility on these subjects towards legislatures, municipal governments, courts, and state executives. The health authorities and the medical profession should join hands to procure adequate provision in general hospitals and dispensaries for the effective treatment of drunkenness and the venereal diseases, and should see to it that none but practitioners fully acquainted with the somewhat elaborate technique of the new treatment for those diseases should be allowed to administer that treatment.

The only other subject I can deal with within the proper limits of this paper is the function of boards of health as teaching forces, a function to be exercised through public health officers, physicians and surgeons, trained nurses, dental nurses or hygienists, private societies, printed reports, posters, and circulars, and the public press. The ignorance of the American people concerning individual, family, and public hygiene is vast; and its consequences are deeply to be deplored. Until lately, boards of health gave their attention chiefly to fighting vivid evils which were obviously damaging the public health, just as the ordinary physician devoted himself to curing patients that were already sick. They labored to protect the community from foul waters, infected or spoilt foods, adulterated drugs, the spread of contagious diseases, and the effects of unwholesome trades. They have lately, like the physician, taken on some preventive functions; and the best of these functions is the giving of instruction and guidance to legislators, public officials, and the thoughtful portion of the population. Through the efforts of private societies and public bodies much instruction has been organized and is under way, as for example in the work of physicians and nurses as inspectors in schools and colleges, of the district nurses, of the new dental nurses or hygienists in schools and orphanages, of the social workers who follow to their homes persons treated at hospitals, out-patient departments, and dispensaries, and of the volunteer physicians and paid nurses who teach mothers how to keep their babies well. Nurses or hygienists are doing the greater part of this eminently concrete and practical teaching; and good results already appear in the mortality statistics, and in the remarkable reductions in the number of cases of children's diseases effected in institutions for children which have been under observation during the last six or eight years. The success of work of these various kinds, already

undertaken and in progress, is so considerable that a great extension of the work is emphatically called for. No public expenditure can be as rewarding as well-directed expenditure on the public health; because that is the expenditure which results most directly in the increase of both public efficiency and public happiness.

There is one kind of instruction, much needed by the American people, which would illustrate better than any other the desirable preventive functions of health officers and boards of health, namely, instruction concerning diet. The ignorance of the American people concerning the enjoyable, healthful, and productive use of foods is profound; and this ignorance results in immense waste, reduced industrial efficiency, unnecessary ill-health, and shortened life. The ordinary American diet errs gravely in regard to both quantity and quality,—particularly in the amount of proteid habitually ingested. In the future the activities of boards of health and health officers should be directed constantly to the giving of universal instruction in the normal feeding of both children and adults, and in the nutrition values of the various materials which the markets supply, while not neglecting the protection of the community from unsafe articles of food. Again, a larger proportion of the American people than of any other people needs to be warned by health experts against the destructive effects of luxury and self-indulgence; because a larger proportion has the means of living soft, lazy, and unproductive lives. It is interesting to see how much public instruction about diet is now being given by European governments, in order to maintain the efficiency of the peoples under the stress of war. Americans need that sort of instruction all the time—in fat years and lean years, in good times and bad—and there is nobody to give it with authority except the medical profession and the public health officials.

Massachusetts set an excellent example concerning the teaching functions of boards of health when the legislature in 1893 appointed a joint board on the improvement of Charles River, consisting of the recently created Metropolitan Park Commission and the State Board of Health. That Act, with its invaluable results, emphasizes the obvious fact that boards of health should be vigorous teachers of sound principles concerning housing, open spaces in cities, parks, garden cities, and air and light in all dwellings, shops, and factories. These are all public health problems, and fields for the demonstration of the power of preventive medicine in promoting the public welfare.

"SCOPE OF THE NURSE IN PUBLIC HEALTH WORK."

Miss Ella Phillips Crandall,

Executive Secretary, the National Organization for Public Health Nursing, New York City.

I ASSURE you I am deeply sensible of the compliment and the significance of inviting a representative of the nursing profession to speak on this occasion.

There is no more splendid record than that of the development of institutional care of the sick in America during the past quarter of a century. The American public has responded liberally to this obligation, but, in comparison with its appreciation of the importance of providing institutional care, it has been surprisingly tardy in recognizing an equal obligation to care for those who, for one reason or another, cannot or will not go to institutions and must, therefore, be given care in their homes. Dr. William Osler was the first to tell us that only 10 per cent. of the sick population of the world is cared for in any sort of an institution. Therefore, America and other countries should provide other than institutional care for 90 per cent. of those who are sick and injured. Of that number a very small percentage represents the class of society who can afford to pay $25 or $30 a week for a graduate nurse's resident service. The remainder must be cared for either by undergraduate or untrained women, or by graduate visiting nurses. If these facts had been brought earlier to the attention of American citizens, it is probable that the history of public health nursing would have been different than it has been.

Up to 1901 there were only fifty-three associations and one hundred and thirty-six nurses doing any sort of visiting or home care of the sick in the United States. About that time what is now well known as the public health campaign began to take definite shape, and among the many activities which it inaugurated the work of the visiting nurse has been conspicuous. There are now 2,066 associations and well over 5,000 nurses doing one form or another of what was originally called district or visiting nursing; and its scope and variety have developed quite as rapidly as has its numerical increase.

The anti-tuberculosis campaign was the first to call for the coöperation of visiting nurses. New laws had been written, new ordinances passed, new appropriations made, new departments and laboratories established; hospitals, sanatoria and open-air schools built and equipped; clinics, classes and lecture courses organized.

Still one factor was lacking to complete the program for the study and prevention and cure of tuberculosis. This was clearly evident when the first reports were submitted, and those who were in charge of the work determined that what was needed was an interpreter, a follow-up agent, because no amount of scientific knowledge, in scientific terms, will very greatly in-

crease the popular intelligence, and no amount of administrative control will be entirely effective until the people themselves, for whom the laws are made, understand that they are protective rather than restrictive, and, therefore, cordially and voluntarily coöperate in the observance of them. Thereupon they looked about to see who might be the most logical interpreter and follow-up agent, and they said: "The visiting nurses are already going in and out of many homes. Their entrée is assured. They are welcomed because they render a tangible service which is quickly interpreted into terms of friendliness and good will, and, therefore, they get the confidence of the people. We will call on them to carry this health message." And so it was that a very greatly increased demand was made for the visiting nurse, who was soon regarded as an indispensable factor in the combat against tuberculosis. Working with her hands as she does, she is recognized by the people as a fellow-workwoman, and they understand her and are willing to do what they see her do, when many times they would not be willing to do what she told them or even asked them to do.

In the same manner, the nurse has been found to be an almost if not quite indispensable factor in the school hygiene movement. Medical inspection was established first, and pretty thoroughly tried out. The following figures from New York City are quite indicative of the records at large, whether in small communities or large ones, and they will show rather conclusively the value of the nurse in the school hygiene movement. Before the nurses were introduced into the New York City schools only 6 per cent. of the physicians' written orders sent home by the children were carried out, and after the introduction of the nurse 84 per cent. of those orders received attention, because the nurse took the orders and the children home and explained to the parents, showed the mother how to do the treatment, and if, for one reason or another, usually because the mother herself was a wage earner, she could not take the child to the doctor or to the dispensary or the clinic, as instructed, the nurse herself made provision for the child to be taken, often going herself. Moreover, because it was possible for her to follow up and treat the children suffering with minor skin and eye conditions, instead of 57,000 exclusions in one year, as had been previously recorded, only 4,000 children were excluded for the same causes after the introduction of the nurses. In fact, medical inspectors themselves have been first to say that their work is almost futile without the follow-up work of the nurses, and some go so far as to say that it is a farce.

In many smaller towns which cannot afford both a medical inspector and nurse, the community has seen fit to employ a nurse and ask voluntary service of its doctors. The physicians have assumed this public duty, but have frequently insisted that the nurses undertake the responsibility of detecting minor ills and treat them according to standing orders which they prescribe. This has led, not only in the smaller communities but in larger ones,

to considerable extension of responsibility on the part of school nurses, which they themselves have been very slow and even unwilling to accept. However, men like Dr. George Goler of Rochester and others claim that the nurse can easily be trained, and should be trained, to do this routine inspection, and thereby liberate the medical inspectors for more thorough and more frequent medical examinations of the children. Hence the nurse has been proven to be an important factor in rounding out the program of school hygiene.

The same may be said in the campaign against infant mortality. Milk stations alone were ineffective; in fact, they were little more than a bait to bring the mothers to the conferences and clinics for instruction. Even conferences and clinics, in and of themselves, were insufficient, and a follow-up agent in the homes was found to be necessary. When the physician in the clinic prescribes an individual formula for the baby of poor parents, as does the pædiatrician for an infant in the well-to-do home, and the nurse goes to the home and with such instruments as the mother can afford, and with such measure of cleanliness as she can establish, teaches her by actual demonstration how to modify the milk for her infant, she not only helps the mother to take better care of the present infant, but she makes her a better caretaker of future infants. Incidentally, she has the opportunity to teach the entire regimen and care of the infant, and, also, home and personal hygiene for the whole family. It is obvious, therefore, that the home visits greatly increase the nurses' opportunities for service and for education beyond those afforded by the infant welfare stations.

Medical social service presents a similar claim upon nurses. In these days of preventive medicine, staff physicians in hospitals and dispensaries are demanding to know the social, economic and industrial causes of the physical conditions they are asked to treat. Frequently they insist upon having this knowledge before they pronounce their diagnosis or inaugurate treatment, and oftentimes the treatment itself is largely social. The physicians are quite too busy with their own important work to search out this social diagnosis or to perform the social treatment, and the socially educated nurse becomes the most logical assistant and co-worker of the practitioner of preventive medicine.

Social service is equally important to the hospitals, where the ever increasing financial burden, due to the development of medical and surgical science, makes it just as encumbent upon them to do finished work, thereby preventing the patients from being repeaters, as it is to avoid the necessity for school children to repeat their grades. Once more, therefore, in response to the demands both of physicians and institutions, the follow-up agent in medical social service has found an essential place.

In another important field the visiting nurse has found a place. Shops and factories, mines and mills, department stores and hotels, insurance companies and other employers of labor

have found that it is a paying proposition to keep their employees in good physicial condition. All manner of industrial welfare activities have been developed, and none have been more prompt in their returns or more appreciated by the recipients than that of visiting nurse service. Indeed, many of the companies have discovered that it pays to take care not only of their employees but of employees' families.

Furthermore, statisticians have pointed out that nurses are the most logical gatherers of vital and morbidity statistics. In this country, where such statistics are so meagre, nurses have come to realize for the first time that they have an opportunity to render a great collective service in behalf of national public health by gathering intelligently and recording accurately these fundamentally important facts and submitting them to statisticians whose duty it is to interpret them.

So from institutions and the medical profession, from sanitarians and statisticians, from teachers and social workers has come the demand for the services of graduate nurses who are not only technically trained, but especially trained for this larger field of public health service. She who was formerly the visiting nurse has become the public health nurse, because formerly her service began and ended in the care of the sick individual while now it becomes but a means to the larger end of health education and protection. Moreover, her service in every home relates itself not to the individual alone but to the family of which he is a part, and she is brought to see that each family is a part of the community; and the sickness in a home, the lower efficiency that results, and the poverty which frequently follows, all become a community problem and, therefore, her task takes on a public rather than a private aspect. Dr. Edward T. Devine tells us that 75 per cent. of the cases of poverty that pass through the Charity Organization Society of New York find their origin in illness. This statement alone emphasizes the fact that the visiting nurse's function is that of a community welfare agent.

In direct response to these successive demands of the public upon visiting nurses which I have suggested, their work has become distinctly specialized and many thoughtful people now consider it over-specialized. It was inevitable that it should have followed such a course up to the present time because private and public funds were appropriated for particular causes and could not be diverted. The result is, however, that there is duplication of effort, over-lapping of districts, and consequent waste of funds. More than that, there is confusion in the minds of the recipients of all this service, and the nurses are now frequently known as "the-nurse-of-the-lungs," "the-nurse-of-the-milk," and "the-nurse-of-the-legs." When four nurses are found in one home in one morning, no one wonders that the weary and impatient mother says, with significant inflection: "Another nurse!" If we were asked to endure four nurses in our homes in one morning, we should be apt to make a public as well as private protest. Therefore, it behooves us to find a way to avoid such a measure of specialization. There is no

comparison between specializing in medicine and in nursing because the education required for the practice of medicine is much more profound, and many now believe that a nurse, thoroughly well trained technically, can, in one academic year (eight months), be sufficiently qualified for the general practice of public health nursing.

The smaller towns and communities are already demonstrating this fact. While the large cities, with their specialized staffs, have done the pioneer work, have established the standards, and have led the way, the small communities, who could afford but one nurse, have called and asked her to be a tuberculosis nurse, an infant nurse, a school nurse and a general visiting nurse all in one, and she has done it with astonishing success and effectiveness, and to the great satisfaction of the communities themselves. Indeed, she is the one who represents most fully what is meant now-a-days by a public health nurse, and it is interesting to see that the term "community nurse" is growing in favor. Moreover, she is not only doing her regular nursing service but, according to the demands of the town in which she serves, she is acting as deputy health officer, sanitary inspector, attendance officer, assistant medical inspector, visiting dietitian, teacher of hygiene, member of the board of health, member of the board of public welfare, social service agent, inspector of midwives, and boarding out places for children, supervisor of fumigation and gatherer of vital statistics. These added duties are severally placed upon her by health officers and physicians and social workers. Indeed, it is sometimes difficult for her to determine whether her primary task of nursing or the interesting opportunities for extended service are the more essential.

Florence Nightingale said years ago: "District nursing is desirable if from a merely economic point of view. It often prevents whole families sinking into poverty and vice, the consequences of which take vengeance on society."

There are hundreds of cities and towns in the United States which are supporting public health nurses in whole or in part.

Within more recent dates, many counties have appropriated funds for similar purposes, thereby putting an end to the sad contradiction of carrying the nurses' beneficent service to the town line and refusing it to the family just beyond and to his country neighbors. Moreover, there are now four states, including Massachusetts, which have undertaken serious health programs in all of which the public health nurse has been given a conspicuous and honorable part.

This rapid growth of public health nursing, together with the ever-increasing demand for legislation in behalf of health protection in general, makes it reasonable to believe that in the not distant future the public health nurse will be considered as indispensable a community servant as is the public school teacher.

CONSERVATION OF LIFE AT MIDDLE AGE

PROF. IRVING FISHER,
Yale University.

IT REALLY is a great pleasure to meet the active health workers in the state of Massachusetts. All of us who have followed in this health movement look to Massachusetts as the leader. Massachusetts has been the pioneer in the past; it was the pioneer in establishing a state board of health, and, I believe, if for no other reason because of what I have heard this morning, that it is going to be the pioneer again.

What I had to say is thoroughly in line with what you have already heard. I can merely add "amen" to all that has been said, and point out by a few facts, figures and inferences, the lesson of it as I see it.

The preservation of human life is important from every point of view, because human life is the most precious possession that human beings have; but the preservation of human life at middle age is doubly important, because middle age is the center and core of this precious human life. It is the part for which the early years are the preparation, and it is the part on which the later years look back, or should, with satisfaction.

It seems to me that the most eloquent testimony to the importance of what Doctor Eliot has said is the fact of his presence here. Owing to intelligent attention to the conditions of conserving personal working power he is middle aged in what most people would call old age. What we see in his person I believe is available to the average individual. In fact, when we get fairly started on the preservation of life at middle age, we shall discover a great deal that we now do not know and will improve to that extent the possibilities in the case. But even now the possibilities are so gigantic that I scarcely dare trust myself to tell you what faith I have in them. Your governor has quoted to you the opinion of the New York health office that the expectation of life at middle age could be improved at least five years. In my estimation, this is putting it very mildly indeed. While I will not try to substitute any higher figure I want to say that I believe the real possibilities, as they will be demonstrated in the next generation, will be several times this figure.

My chief business in life is that of an economic statistician, and I do not hesitate to say that while vital statistics are ordinarily regarded as beyond the realm of economics, to me there is no economic problem of so vast importance, there is no economic saving of so colossal proportions, as that connected with the saving of human life, especially at middle age. We should emphasize this, not only because the saving that is possible is large, but also because that saving is not being made. I believe that it is in this direction that a new start should be made in the public health movement in Massachusetts and, fol-

lowing Massachusetts, throughout the United States.

Our progress so far has been chiefly in the direction of saving of human life from the ravages of infectious or acute diseases, whose main impact is in infancy and early life. Wonderful strides have been made in the field of public hygiene. Plagues and pestilences are no longer the dread scourges they once were. But we have utterly neglected the fight against the diseases which your governor has referred to as those of wear and tear. For practical purposes we may roughly divide human diseases into two kinds, the acute or infectious, of which typhoid fever is a type, and the chronic or degenerative, of which heart disease, Bright's disease and arterio-sclerosis are types. We have made little if any progress in fighting these terrible maladies of middle life. I say we have not; I mean we have not in America, for the mortality from these diseases has increased 86 per cent. in the thirty years preceding the last census. But we have the example of Europe to show that progress can be made, for while we have been going backward Europe has been going forward.

A contrast between the conditions in this country, taking New Jersey and Massachusetts as examples, and England, show that at early ages there has been a saving of human life in both countries. There has been a substantial lessening in the death-rate for infants in both countries. At age ten there is some saving, although not very much in either country. At ages fifteen, twenty, twenty-five, thirty, thirty-five there continues to be some saving. But in Massachusetts and New Jersey there has been an increase in the death-rate at age forty and above, the increase going on more rapidly as old age is approached, the death-rate over seventy-five having increased enormously.

Not so in England, however, which shows a saving even up to old age, a saving as great as the loss for us. The reason for this difference is that in England, as also in France, in Germany, in Sweden, and in most other European nations, there has been a decrease instead of an increase in the wear and tear diseases.

The death-rate in the United States from apoplexy was less twenty years ago than either ten years ago or today. In the same way, diseases of the urinary system show a progressive increase during the three decades ending with 1890, 1900, 1910 respectively, the census years for which we have such statistics. Diseases of the heart and circulatory system in the same way have increased from thirteen to nineteen per one hundred thousand in the three decades. The three kinds of diseases combined have increased from twenty-seven to thirty-eight per one hundred thousand in the twenty years (1890–1910)—a very steep ascent. In England, however, we find a descending trend about equal to our ascending trend. It is because these diseases which are the degenerative diseases and the diseases which affect the death-rate in middle life are increasing here while lessening abroad, that we are increasing the death-rate after middle life, instead of decreasing it.

I wish to give you at this point the results of the experience of the Life Extension Institute in regard to the degenerative diseases. The Life Extension Institute, which your chairman has mentioned, has been established in order to help work out this problem. Ex-President Taft is the chairman of board of directors. General Gorgas is consultant in sanitation. Many of the health experts in this body and on this platform are members of the hygiene reference board of ninety-four of the best health experts in the United States. The object is to prolong human life, with special reference to safeguarding middle age. In order to do this, and to bring home the responsibility to each individual, we give, through medical examiners located throughout the United States, individual health examinations. The object of these examinations is that individuals may find out exactly what, if any, are their peculiar and especial disabilities. Then such individuals are put in touch with their family physician, and the family physicians are told what facts were discovered from the physical, urinary, blood, or other examinations. The family physicians are also given the benefit of whatever information the Life Extension Institute as a central body has been able to assemble, that may be of assistance to them in treating their patients.

When we made our first contracts with life insurance companies to examine their policy holders and learned the appalling results of the first examinations, we wondered, inasmuch as only between 5 and 10 per cent. of the policyholders who had the privilege of free medical examinations took this privilege, whether the terrific amount of degeneration that was found among them was really representative of the general population. It might, we thought, be due to a selection, to the fact that only the human wrecks chose to be examined. But recently we have been making examinations of the employees of whole institutions, large banks and other industrial concerns in New York City, and we find almost the same conditions there. Out of two thousand such examinations among young men and women of an average age of thirty-three, just in the early prime of life, men and women supposedly picked because of their especial fitness for work, only 3.14 per cent. were found free of impairment or of habits of living which are obviously leading to impairment. Of the remaining persons, 96.69 per cent. were unaware of impairment; 5.38 per cent. of the total number examined were affected with organic heart trouble; 13.10 per cent. with arterio-sclerosis; 25.81 per cent. with high or low blood pressure; 35.63 per cent. with sugar, casts or albumin in the urine; 12.77 per cent. with combination of both heart and kidney disease; 22.22 per cent. with decayed teeth or infected gums; 16.03 per cent. with faulty vision uncorrected. These figures are especially surprising because of the large number of young men and women suffering from diseases of the heart, kidney and circulatory system. The fact of greatest import, however, was that impairment, sufficiently serious to justify the examiner in referring the examinee to his family physician for

medical treatment, was found in 59 per cent. of the total number of cases, while 37.86 per cent. were on the road to impairment because of the use of "too much alcohol" or, "too much tobacco," constipation, eye-strain, overweight, diseased mouths, errors of diet, and so forth.

And what is the cause of this appalling increase, in the United States, of these and other degenerative diseases? I believe it can be shown to the satisfaction of any reasonable person that the increase is largely due to the neglect of the individual hygiene in the United States. It is due, first, to ignorance of individual hygiene; second, to indifference to individual hygiene, and third, to sheer inability to practice individual hygiene because of industrial conditions which do not permit it. All three of these evils must be corrected, and the boards of health of cities and of states can do much to correct them. In Massachusetts the need, while perhaps not as great as in some other states, is still very real, for there has been an increase in the diseases of the heart, arteries, kidneys, in apoplexy and in paralysis.

The difficulty is that our attention heretofore has been too largely engrossed with public hygiene, so called. As Rubner has said: Too much attention relatively has been hitherto put by health officers on bacteriology as compared with common physiology. The public health officer in this country has not regarded himself as a teacher of individual hygiene. He has not thought it necessary even to mention the alcohol question. He has not thought it necessary to consider problems of ventilation, of dietetics, of auto-intoxication, of exercise, of fresh air, of rest, of recreation; but before we can really cope with this public health problem we have got to take these things into account. As I see it, the great work for the health officer of the future, without any relaxation in the fight against the acute or infectious diseases, will be to get the cooperation of the public in personal hygiene.

The best way the health officer can help the public will be to show the public how to help themselves. You know there are religionists who like to delegate all their religion to the high priest, and hitherto the public have regarded you health officers as the high priests of health. They must now be told that they also have a responsibility, and they must be shown how to discharge this responsibility. They must be taught to protect themselves from the degenerative diseases which are the result of intemperate eating and drinking, bad air, overstrain, worry, and the other innumerable evils that accompany our present-day civilization. If a man were suddenly afflicted with smallpox or typhoid fever or any other acute malady, he would lose no time in getting expert advice and applying every known means to save his life. But his life may be threatened just as seriously, though possibly not as imminently, by arterio-sclerosis, heart disease, or Bright's disease, and he will do nothing to prevent the encroachment of these diseases until it is too late, but will continue to eat as he pleases, drink as he pleases, smoke as he

pleases, or overwork, and worry himself into a premature grave.

It is as though a man driving an automobile were to continue blindly on his way, never pausing to tighten a nut or to mend a punctured tire, never allowing his engine to cool when it got overheated, feeding it too much gasoline when it was going down hill, and blissfully thinking that his car was in good condition so long as it did not stop. You know as well as I that it would stop, long before its maker had intended that it should, if the simple care which is necessary to keep it in good condition were not given it. There is no doubt that the human machine is more delicate and complicated than any machine made by human hands. And yet the man who would be most careful of his automobile, who would have it examined by an expert at least once a year to see that it is in good r unning order, who would think the other man I mentioned an irresponsible idiot, is in many cases, either amused or annoyed if told that he should keep his own machinery in good running order by care and inspection. As long as he is not sick in bed he thinks there is no need of looking after his health.

And this is the problem which lies before the health officers—to change the suicidal attitude of the ordinary individual. To do this we must get our health ideals on a different basis. We must put before the individual, as his ideal, physiological habits of living. Human life must be brought into conformity with physiological science. There are two great influences acting on life, one to do a thing because it has been done, whether it is right or wrong, and the other to do a thing because science shows it to be right. We have been following the first of these— custom; we need now to follow science. The reason that Japan has made so much progress as to astonish the world in the last generation is because an emperor of Japan said: "Let us henceforth follow reason instead of tradition." It seems to me that is exactly the motto which the health officer should take for himself. Let us follow reason instead of tradition.

But you say: "This transformation from tradition to science cannot be accomplished,—it cannot be done, because we have certain customs and habits which you cannot break." But it can be done, and it has been done in certain regards. The tuberculosis movement has shown the way. I can remember when I myself was a victim of tuberculosis; sleeping out of doors was regarded as a very queer method of combating the disease, and something that no well person would think of practicing; but in the short space of fifteen years there has been a revolution of opinion on this subject and to a large extent a revolution of habit. Outside sleeping in other than mild climates was started by Doctor Millett, whom I see in the audience. It was he who was the pioneer in that breaking with old custom and defying fear of night air and damp air. And sanitoria all over the world have followed his example. Consequently, there has been a revolution in the point of view so far as air is concerned. I remember some twelve years ago,

when we first started a tuberculosis institution in New Haven County, we put a lay figure of a woman out of doors over the street, opposite a tuberculosis exhibit so that people passing by would be attracted and come in. So lifelike was this lay figure that many people thought she was alive and protested that we should allow such "cruel exposure" in the sharp March air. Today we have in New Haven County a sanitorium where a hundred men, women and children, are sleeping out of doors, not only in March but in January and February and throughout the year, whether it is cold, windy, damp, or dry, and nobody thinks anything of it.

Another illustration may be found in the sour milk craze which, when it had the backing of a scientific man in Paris, swept all over the world.

Again, you know, many of you, that there was one health officer who was responsible for a safe and sane Fourth, who revolutionized the national patriotic customs of this country. When Doctor Evans of Chicago, eight years ago, first began a crusade for a safe and sane Fourth, with no other assistance than the proprietor of the *Chicago Tribune*, he was laughed at, and was told even by sympathetic people: "You cannot change the customs of an entire country. The public want an unsafe, an insane Fourth of July." But by dint of persistence, intelligence and the use of the newspapers, the thing was done in less than a single decade. If such a change can be brought about, cannot we, if we all pull together, make a very considerable change in every phase of personal hygiene, including the alcohol problem, and have not we now the best opportunity that the world has ever seen?

As Doctor Eliot has told you, and as we know from reading the daily papers, one of the effects of the European war has been the loosening up of established custom and the emphasis on scientific efficiency as superior to custom. Hence it is that all these nations, in order to get the best out of their soldiers and the best out of their workmen making munitions of war, are now fighting alcohol. They are also studying dietetics. The Life Extension Institute has been applied to help in this movement abroad. Is it not a glorious opportunity for America? While Europe is trying to save human life in order to spend it, why shall not we try to save human life in order to save it? What we can gain is so large, and the present is so magnificent an opportunity for it, that I hope this conference will be the starting point for what Doctor Eliot has called an educational program.

And when we have got all that modern physiology can teach us we shall find ourselves simply going back, with some improvements, to the primitive ideals of ancient Greece, the ideals of a sound mind in a sound body. The health ideals of the Greeks entered into their daily life. Their education consisted, as they said, of music and gymnastics, by which they meant much more by music than we do, and much more by gymnastics. They have handed down to us in imperishable marble their ideals of the human form, their ideals of athletic development,

whereas we today leave athletic development to the prize fighters. Why shouldn't we readopt these old Greek ideals and make them a part of our American ideals? They should enter into our daily habits. They should enter into our literature. They should enter into even our drama.

I am glad to see that Percy MacKaye, who visualized in St. Louis so wonderfully by a masque certain ideas which were then supposed not to be capable of visualization, is here today on the platform. He and many others of us have become enthusiastic over the idea of a health and peace masque, pageant, drama and exhibit, which will show in much the same way and by much the same methods, but with different subject matter, how, while Europe wages war, we devote ourselves to the ideals of peace and health.

Whatever the ultimate ways and means of conserving the prime of life, the immediate task before us is to recognize the need of applying the science of physiology to the individual, to preach the gospel of physiological living to the public and, so far as possible, to practise what we preach.

WHAT MASSACHUSETTS HAS DONE AND MAY YET DO FOR THE PUBLIC HEALTH.

Prof. William T. Sedgwick,
President of the American Public Health Association.

THIS gathering is an inspiration, and no body of people in the United States will feel more proud of its success today than the American Public Health Association, three past presidents of which are sitting behind me upon this platform. That great body, which comprises now some 1,400 persons interested in the public health, will be glad to hear that Massachusetts is taking a new lease of life in public health matters, is keeping its face toward the sunrise, and is joining to the forces having to do with preventive medicine and public sanitation, last but not least, that great work of personal hygiene, aspects of which Professor Fisher has just been dwelling upon.

But, my friends, you and I stand upon the shoulders of the past. Massachusetts has long been a pioneer, and, though a Massachusetts citizen, I want to speak today more as president of the American Public Health Association and give to Massachusetts the honor that is her due for the work that she has done hitherto,—first, in the line of preventive medicine. Very early in the history of smallpox in prevention by inoculation, Massachusetts led with the name of Boylston. Then, when vaccination came on, she again led with her experiments in Boston and Milton, laying the foundations of experimental medicine, and with the name of Waterhouse bringing added distinction to American medicine and especially preventive medicine. And again, the names of Lemuel Shattuck and of Edward Jarvis of later date must never

be forgotten, the first a public health pioneer in the middle of the nineteenth century, the other a statistician whose splendid accumulation of statistical material forms one of the ornaments of the Boston Public Library.

Again, as has been said this morning, Massachusetts was one of the leaders in the organization of a state board of health, and the Boston Board of Health was one of the first to be formed, the state board in 1869, the city board in 1872. And again, in 1885 the Massachusetts Drainage Commission was one of the first in the world to report, and to do for Massachusetts very much what the Rivers Pollution Commissions of England did for England and Great Britain. It was in 1886, however, that the greatest step forward was taken, when our State Board of Health was formed to replace the State Board of Health, Lunacy and Charity which had shortly preceded it, succeeding the original State Board of Health. Fortunately for leadership in the new board a member of the Massachusetts Drainage Commission and of the old board was at hand in the person of Dr. Henry Pickering Walcott, a brilliant and able leader, and with him was immediately associated—and this was a very remarkable step forward—an hydraulic engineer, Mr. Hiram Francis Mills, then of Lawrence, now of Lowell. So that the new board consisted of a leading authority on state medicine, Doctor Walcott, as chairman, and a leading engineer as chairman of the Committee on Water Supply and Drainage. The like of this had never been known before in any country, and its novelty was abundant testimony to the leadership and wisdom of the state of Massachusetts. And now, for these many years, these and other devoted men upon the old State Board of Health have given without pay—and sometimes unhappily without reward—to the state of Massachusetts their services, their devotion, their intelligence, their scientific skill and ability.

Today we have a new arrangement, and one which is promising even greater things in the future; for each age, standing upon the shoulders of the past, ought to be able to improve upon the last. A brilliant leader has come to us—thanks to the governor—from the United States Public Health Service, which is today in effect a National Department of Health and is doing all that any national department of health can do at this particular juncture of our development. Doctor McLaughlin has come to us with an experience derived from that remarkable service. He has worked in Europe. He has worked in the Philippines. He is no tyro in public health matters. And he is one of the first to say that Professor Fisher is right, and that without abating one jot or tittle of that splendid work which the state has been doing in preventive sanitation and in preventive medicine we should now pass on to preventive hygiene, the last and highest step, and also, I regret to say, the most difficult in the public health campaign.

Yes, friends, the state of Massachusetts has been a leader in preventive medicine. I have mentioned the names of Waterhouse and of Boylston.

It has been no less a leader in preventive sanitation. I have mentioned the names of Walcott and of Mills. We have now to move forward into preventive hygiene. And I see that I have made one serious omission. One of the finest things that the late State Board of Health did was to bring to this state the most distinguished man of medicine in the United States, Theobald Smith, and they brought him here for purposes of preventive medicine. The guardianship which he has kept over the antitoxins and the vaccines which have been used upon our children all these many years can never be overestimated or repaid by the state of Massachusetts, and it is with the greatest regret that we are surrendering him at present to the Rockefeller Institute. But our gratitude and goodwill go with him.

With preventive sanitation secure in the improvement of our water supplies and our sewerage systems, with preventive medicine strong in the past and strong today under Doctor Rosenau—able successor of Theobald Smith in this splendid work—we have still before us this preventive hygiene of which President Eliot has sketched so splendid an outline and which Professor Fisher has so ably commented upon.

I had intended to touch upon this also, for a part of my title is what Massachusetts may yet do,—what she has done, what she may yet do; but these more able speakers have already so thoroughly plowed the soil that I am sure there is very little left for me to do. Certainly I do not propose to harrow it,—or you.

Yet there is one thing that I am going to say in this connection, and that is that this increasing death-rate above forty, seems to have—at least I strongly suspect, though I cannot quite prove it today—some relation to the sexes. It appears to be the men particularly who are dying more rapidly above forty, and I leave it with you to discover whether this is, indeed, a fact or only an apparent circumstance, and if it is a fact to inquire why. But surely when one has reached my age and looks about him to see men like Governor Guild dropping by the way at fifty-six, and to have seen men like President Walker of the Institute of Technology likewise dropping out at about that age, and Phillips Brooks, and many more, something is wrong, and it seems to me that I see more widows about than I do widowers. While it is a very cheap and easy answer to say that there is a reason for this which is obvious to anybody, the figures do not bear it out. The fact seems to be that in the strain of modern life it is the men who are very largely falling by the way, and if this is true, and I don't know yet absolutely that it is, then that should give us pause. We should consider what it all means, for what did it not mean to Massachusetts to lose Phillips Brooks and General Walker and Curtis Guild long before their time? The same thing is going on with others almost every day, and it is, as these men have told you, time to attack alcohol and high living and overwork and a thousand other things that we

do at and beyond middle age which we ought not to do.

And here we must fall back, as Professor Fisher has rightly said, on the physiologist, but I have not found that the physiologists are sufficiently awake to the problem. They teach us physiology, most excellent physiology, but there still remains the teaching of personal or preventive hygiene, and that is the problem which boards of health, health officials, medical men and sanitarians have to face in the next few years.

Now may I not say also a word as member of the Public Health Council of the State Department of Health? The council rejoices, I am sure, in this splendid attendance and evidence of interest. We hope that the name of every person who has been here today will be turned in to the ushers, for we believe that these names will constitute a nucleus around which we may build. We rejoice in the lesson concerning public health nursing which has come to us from New York, and which has been so ably given to us. We rejoice also to know that our own instructive District Nursing Association, in its last annual report, has emphasized this matter, as it ought to do, and that Miss Beard and her supporters and her coadjutors are fully awake to the need of proper public health nursing. But may I not make one suggestion here? In my opinion it is not enough to take an ordinary trained nurse and simply fix a label upon her stating that she is a public health nurse. We want, as Miss Crandall has rightly said, something more than bedside nursing. We want first of all real women, with red blood and sympathy and kindness of heart in them, and not mere machines for doing what somebody has taught them in the training school to do; and then, in the second place, we must teach them more than we have ever taught hitherto about hygiene, and public hygiene, and preventive medicine, and all those things, so that they shall at least have a point of view. How shall they teach unless they are taught? And, finally, we must give them adequate reward; we must give them recognition and proper recompense; for the work that they will do will be among the most important labors that public health workers shall undertake in the next generation.

And then our boards of health, our local boards—the State Department of Health can do nothing without the adequate support of the local boards of health, and our first duty, your first duty, the first duty of the public, is to see that these are well constituted, of intelligent, active, informed, sympathetic citizens. In the second place, they must call to their aid expert service. We need trained health officers. If we need trained public health servants, if we need a trained state commissioner of health, such as we have, surely we need trained health officers all over the state. Here, again, it won't do to take an ordinary doctor and put a label on him saying that he is a health officer. He, too, must be specially trained. *Training* is the key-note of the time, *education* the foundation of service. It may be that some of you will need to coöperate, some boards of health getting

together, instead of standing off and jealously watching their neighbors. See if you cannot get together and work as they are working at Framingham and Wellesley and other places, pooling the sums of money which they have and getting expert service, as we long ago got it in our public schools. There was a time when every school district felt that it must have a separate superintendent and must stand on its own independent legs, and then it was discovered that a superintendent could be hired for a large area and furnish expert service to a number of towns. Why not apply that idea to our boards of health, or some other idea, and at any rate get *expert service* somehow?

But, as I say, the time is going and this topic is most engrossing. I must, before stopping, however, say one thing more. Yesterday a number of us received from the American Red Cross in Washington telegrams saying that Doctor Strong had cabled for a large number of doctors, sanitary inspectors, sanitary engineers and others, to help him in the work in Servia, and immediately those of us who got these telegrams set to work, and I am happy to say to you that, although we did not receive them until late yesterday afternoon, already a number of volunteers of the right type have come forward, physicians, sanitary inspectors and sanitary engineers, so that by the 13th of May, when these people are to leave the country, we hope that a properly trained group of health officials, inspectors, physicians and others, will be ready to go and uphold the strong arm of Doctor Strong. Thus, my friends, does the local problem reach out into the wide, wide world. Servia today is suffering from typhus. She has returned to the middle ages, to the jail fever, or ship fever, or camp fever, that we thought was extinct, and vermin are carrying this fever abroad. It is your duty and mine to uphold the work of those who are there, first, with money, second, with sympathy, and third, with the forwarding of supplies and expert service. The call is for capable, well-trained volunteers, medical men, sanitary inspectors, and sanitary engineers. Some of these eager to go may be in this audience.

THE MORNING SESSION WAS CLOSED BY DR. ALLAN J. MCLAUGHIN, MASSACHUSETTS STATE COMMISSIONER OF HEALTH, WHO SPOKE AS FOLLOWS:

One advantage of being the last speaker is that you have an excuse always for cutting it short. In view of the fact that the subject has been so well covered I may well do so. There are one or two points I would like to bring out, however.

In the first place, I want to accentuate the fact that there is a limit to the possibilities of official action in combating contagious and other diseases. All health officers know—it makes no difference what the health problem may be—that, after all the factors in these problems are corrected that are corrigible by official action, there remains always a residuum of disease; for instance, in typhoid fever, called residuary typhoid, with which we are satisfied to live, and which under the old idea was considered an inevitable visitant, which we simply had to stand for. It is this that we are trying to get rid of, and this is beyond official action except as offi-

cial action extends through education, because it is corrigible only by the individual effort of the individual citizen and by the activities of the individual citizen in personal and family hygiene. Preventive medicine is an exact science, based on the precise knowledge of the cause of disease and the methods of spread of disease, and of the habits and weaknesses of the germs that cause disease. I will say no more on that line, except to accentuate that what we need is not more knowledge of preventive medicine but a wider and a more vigorous application by everybody of the knowledge that we already possess. This is our problem, and this can only be changed by the application of educational methods in personal hygiene; the education of the individual, also, in his obligation to his neighbor, that in practicing personal hygiene he is not only working for himself but he is fulfilling his obligation not to spread disease among his neighbors.

The practicing physician has been enlisted by us in this campaign of education in personal hygiene; we may count upon his loyal support, but there are thousands and thousands of people who never—or rarely—call a physician. The great submerged tenth, or in larger numbers the other half, as it has been called, cannot be reached by the educational efforts of the practicing physician, however well intentioned he may be. There is only one way in which this sanitary instruction can be carried into the home, and that is by the public health nurse. And I venture to say that the future reductions in the death-rate in this state will be chargeable directly to this agency, and will be in direct proportion to the number of public health nurses engaged in this work.

The type of woman necessary is something more, as has been indicated, than a nurse. She must have the milk of human kindness. She must have tact, patience, human solicitude for suffering, and sympathy for the poor, because the poor are sensitive, and her efficiency will be impaired 75 per cent. if she looks down upon them from a great height. These are the great qualities that she must have, in addition to her technical training.

There is one other point, and one which has been touched upon, and that is that the public health nurse must not be a specialist; she must not be a tuberculosis nurse or a baby hygiene or school nurse; she must be a public health nurse, because in this state and other states there are many towns of ten thousand or fifteen thousand that can well afford to employ one nurse as a public health nurse engaged in three or four activities, when it is out of the question for that town to employ one nurse for each activity. So that the public health nurse of the future must be well trained in all these branches of preventive medicine and be able to exercise all these activities in the town in which she may be employed.

I will just touch one other great agency in this movement, which is secondary only to the public health nurse and in which the public health has a part, and that is child hygiene and the possibilities of medical inspection of school children. This is the most logical point from which to attack the problem of tuberculosis. At present we are taking tuberculosis cases as we find them, and neglecting the opportunity of taking the school child, the flat chested, anæmic, ill-nourished child, who will surely become a victim of tuberculosis. We are at the present time in a haphazard way doing something in this line, but there is a woeful lack of coördination of effort, a great lot of waste motion and lost energy because of the lack of a central directing power to secure uniformity of method and coördination of effort in our medical inspection of schools.

I believe that the time has come when we need and must have a state-wide organization, which will include all those interested in the teaching of hygiene—health officers, practicing physicians, examiners of schools, public health nurses, school teachers, and every other agency that is engaged in the teaching of hygiene in any way, and I believe when we get such an organization we will begin to make real advances in this great field of preventive medicine. With such an organization we can work for common objects. We can coördinate our efforts. We can do away with this waste motion and lost effort and duplication of work. And I may say also that we may do away with some of the pitiful little jealousies and criticisms and antagonisms that have developed because of the different agencies and entities that are directing these various lines of work which should be put under one directing agency of some kind. We don't care what that agency may be. We don't care where the authority may be. We don't care where the credit

may come. What we want is to get coördination of effort and coöperation of all who are engaged in this great movement. I believe that the time has come for such a state-wide organization, and I leave it to you to work out the details.

There is just one other thing, and that is this: I believe that such an association as the Massachusetts Association of Boards of Health should not have a single health officer outside of its fold, and yet there are dozens of Massachusetts health officers and health officials who do not belong to that society and take no part in its wonderful work. Just as I believe that the 1,400 members of the American Public Health Association should be 14,000 or 140,000, and not leave all the work to a few men who are giving their lives to it. It is everybody's duty, and that extends to the limits of the Commonwealth, to every individual citizen in the Commonwealth.

MASSACHUSETTS ASSOCIATION OF BOARDS OF HEALTH.

The regular quarterly meeting of the Massachusetts Association of Boards of Health was held in Kingsley Hall, Thursday, April 29, 1915, with the president, Dr. Milton J. Rosenau, in the chair.

The reading of the record of the last meeting was omitted.

It was voted that the following applicants, having been recommended by the Executive Committee, be elected to membership in the association: Dr. Clarence J. Allen, 38 Church St., Winchester; Willis C. Bacon, Board of Health, North Adams; Sarah Beatty, R. N., New England Hospital, Dimock St., Roxbury; Dr. Conrad Bell, Board of Health, Waltham; Mr. Charles W. Birtwell, 6 Hancock Ave., Boston; Dr. William M. Bodwell, 2 Lexington St., Framingham; Francis Brown, Washington Sq., Salem; John J. Burke, 224 Beech St., Holyoke; (Mrs.) Annie M. Chaffe, 25 Dover St., Boston; Dr. Gilman L. Chase, Clinton; H. W. Clark, Room 502, State House, Boston; Augustus S. Cleaves, Gardner, Mass.; Dr. William Hall Coon, 92 Main St., Haverhill; Dr. Simon F. Cox, Superintendent New Haven Hospital, New Haven, Conn.; Dr. Eliza J. Dadmun, 1376 Commonwealth Ave., Allston; Thomas J. Dockray, 44 High St., Canton, Mass.; Harrison P. Eddy, 14 Beacon St., Boston; Dr. David L. Edsall, 80 Marlborough St., Boston; Mr. Philip V. Erard, Board of Health, Springfield; Dr. David H. Fuller, Bradford Ave., Fall River; Otto K. Gatzke, 7 Mt. Pleasant St., Webster; Joseph R. Glennon, 679 Cottage St., New Bedford; Miss Ellen Hale, 3 Charles River Sq., Boston; Dr. Clement H. Hallowell, 688 Washington St., Norwood; John Higgiston, Board of Health, Milford; Dr. Laura A. C. Hughes, 98 Huntington Ave., Boston; Thomas E. Hunt, City Hall, Newport, R. I.; Douglas W. Hyde, City Hall, North Adams; Edward A. Ingham, Massachusetts Institute Technology, Boston; Dr. L. C. Jones, Board of Health, Falmouth; Dr. Eugene R. Kelley, State Department of Health, Boston; Dr. Francis H. Lally, Board of Health, Milford; Dr. J. E. Lamb, 935 Winthrop Ave., Revere; Miss Julia May Leach, Superintendent, Addison Gilbert Hospital, Gloucester; George S. Lennon, Board of Health, Haverhill; Hermann C. Ly'hgoe, 501 State House, Boston; Dr. Eugene J. McCarthy, 17 Gamet St., Malden; John J. McDonough, 100 Belgrade Ave., Roslindale; Mrs. Fannie W. Marsh, R. F. D., Reading; Prof. Charles E. Marshall, 44 Sunset Ave., Amherst; John F. Monaghan, 2 Oak St., Waltham; R. S. Nye, Board of Health, Falmouth; Dr. J. U. Paquin, 1306 Acushnet Ave., New Bedford; Henrietta E. Patten, 209 Riverbank Ct., Cambridge; Bernard Peterson, 419 Salem St., Woburn; Dr. Laurence L. Pierce, 10 Central St., Arlington; Dr. William J. Powers, 225 High St., Holyoke; Daniel L. Prendergast, 101 Milk St., Boston; Maurice J. Quinlan, Board of Health, Milford; Dr. Norman P. Quint, Board of Health, West Medway; Mrs. Ada E. Sheffield, 60 Shepard St., Cambridge; David M. Smiley, Board of Health, Mansfield; Dr. A. L. Stone, Waltham; Ralph R. Stratton, Board of Health, Melrose; Dr. T. L. Swift, Board of Health, Falmouth; George W. Tupper, 74 Pleasant St., Brookline; Dr. George

B. Underwood, Board of Health, Gardner; George V. Wager, Russell; Margaret E. Whitechurch, Hotel Oxford, Boston; Dr. Frankwood E. Williams, 313 Ford Building, Boston.

The following resolution on the death of Dr. James B. Field of Lowell was read and unanimously adopted.

WHEREAS, Dr. James B. Field of Lowell, a member of the Massachusetts Association of Boards of Health and at one time chairman of the Lowell Board of Health, died at Lowell on April 15, 1915, and

WHEREAS, The records show that Doctor Field was a founder of the Association, having been one of the thirty-five men interested in public health who met at Huntington Hall on January 11, 1890, for the purpose of forming a "society, comprising the various boards of health of the state of Massachusetts." He acted as secretary of the meeting and was one of the committee of six appointed to draft a Constitution and By-Laws, and

WHEREAS, at the first regular meeting of the association, held at the Revere House on March 19, 1890, Doctor Field was elected treasurer, holding that office until his resignation in January, 1911, and

WHEREAS, The records further show that Doctor Field retained his membership in the association for a quarter of a century, taking an active interest in its work, it is therefore

Resolved, That the Massachusetts Association of Boards of Health, realizing the loss which it has sustained by the death of Doctor Field, make this formal acknowledgment of its appreciation of his services to the association, and it is further

Resolved, That these resolutions be placed upon the records of the association and a copy thereof sent to Doctor Field's family.

It was unanimously voted that the distinguished and long services with this association, as well as with the health of the Commonwealth, rendered by Dr. Henry Pickering Walcott, shall be in part recognized by electing him an honorary member of this association.

The following papers, printed elsewhere in this issue, were then presented:

"The Control of Communicable Diseases," Dr. Eugene R. Kelley, Director, Divison of Communicable Diseases, State Department of Health;

"The Relationship between the State and Local Boards of Health," Dr. Lyman A. Jones, District Health Officer, Berkshire District.

"The Health of the Farmer," Dr. John S. Hitchcock, District Health Officer, Connecticut Valley District.

"Vacation Health Problems," Dr. Adam S. MacKnight, District Health Officer, Southeastern District.

"The Continuing Problem of Vaccination," Dr. Samuel H. Durgin, Past President, Massachusetts Association of Boards of Health.

"The Control of Cancer," Dr. Edward Reynolds, Vice-President American Society for the Control of Cancer.

"Some Problems of the Health Officer of a Small City," Dr. George Francis Curtis.

THE CONTROL OF COMMUNICABLE DISEASES.

DR. EUGENE R. KELLEY,
Director, Division of Communicable Diseases, State Department of Health.

POSSIBILITIES.

NEARLY forty years have passed since Pasteur startled the civilized world by his dramatic statement, "It is within the power of man to abolish contagious diseases from the earth." It seems quite clear now that few, if any, of his contemporaries grasped the full significance of this prophecy. It is probable that most of them believed that it was merely the idle dream of a visionary. Yet each year only shows more clearly the great fundamental truth of this prophecy. Few now doubt the literal truth of his contention. Whether

mankind ever completely realizes the vision and actually *does* abolish all contagious disease depends entirely upon whether mankind is willing to pay the price. The price can be partly expressed in terms of money, but even more in terms of work and investigation, of cheerful acceptance by the individual of restraint and inconvenience for the benefit of the many, and above all of widespread universal education in the simple fundamental principles of hygiene.

Achievements up to the Present.

The most encouraging hope and promise for the future in any consideration of this subject is in the achievements of the immediate past. It is no exaggeration to say that until the past half-century mankind never made any *intelligent* advance against communicable diseases. Their true nature was entirely unknown, and without this fundamental knowledge, any real progress was impossible. Since the discovery of the true causes of communicable diseases phenomenal advance has been made, even though the exact nature of the causative germs of some of them baffles our best investigators to this day. Yellow fever, Asiatic cholera, typhus fever, for instance, have all been eradicated from our shores or kept at a negligible minimum as causes of sickness and death. Yet all of these terrible pestilences have ravaged cities of this country within the recent past and would do so again tomorrow were it not for the continuous vigilance of the guardians of the nation's health.

Among our common every-day communicable diseases the results are no less gratifying and astonishing. That deaths from consumption in this state today are only a little more than half; from diphtheria and typhoid less than one-quarter as frequent as they were twenty years ago, is a cold, hard fact—but it is something more than that. It is a wonderful monument to the intelligence, self control and public spirit of the citizens of the Commonwealth: to the skill and devotion of the medical and nursing professions; and especially to the zeal, wisdom and devotion to the public good of the officials of both the state and local boards of health of the Commonwealth during these past two decades. It is impossible to surpass this record for several of these diseases for they have left us only a fraction to overcome ere we extinguish them utterly.

But the fact that the pace already set is a hard one to follow should only stimulate us the more to do our utmost. If anything more is needed to make us realize that our problem in these matters is one to challenge the best there is in us, the knowledge that this "residuum" of preventable diseases, passed on to us to extinguish, is of necessity the hardest part to stamp out, else it would have been stamped out already, ought to make us realize the magnitude of our task.

Constantly each year about 300 deaths from typhoid, 500 from diphtheria, 4,000 from consumption, 6,000 from pneumonia; a less constant but considerable number from scarlet fever, measles, whooping-cough, infantile paralysis and epidemic meningitis; and a largely unknown but unques-

tionable large number of deaths from syphilis and gonorrhea, stand between us and the realization of Pasteur's prophecy for Massachusetts.

Essentials for Control.

This is our problem—what are the means that we must depend upon to solve it? To my mind the principal factors in the successful solution are:

1. A well working system of prompt reports of all communicable diseases to the health authorities from the physicians.

2. A carefully worked out routine system of study, and prompt investigation of all outbreaks, by the health authorities; in other words, health authorities that know their business and are "on the job," with reasonable, but not necessarily lavish, financial support behind them.

3. Regulations for the isolation and supervison of persons ill with contagious diseases, based upon both common sense and scientific knowledge and the principle of maximum protection to the public with minimum inconvenience and hardship to the patient and family.

4. The safeguarding of certain important channels of disease transmission, especially the water and milk supplies.

5. The widest possible utilizing of certain public health machinery designed expressly to combat communicable diseases.

Under this heading would come:

(a) The public health laboratories—whether research laboratories where new knowledge of the nature of contagious diseases is constantly being sought and found; or diagnostic laboratories, where the practicing physician and the officials of boards of health can have the correctness of their diagnoses verified, or determine under what conditions it is safe to release quarantine restrictions; or laboratories where antitoxins, vaccines, and other preventive and curative sera are prepared and distributed.

(b) The dispensary and hospital for contagious diseases. Their obvious importance and significance need no special mention before this gathering.

(c) Public health nursing organizations.

(d) School medical inspection, so called; or, better, hygienic school supervision.

6. The greatest of all forces at our disposal, that of education along public health lines, especially education of children and mothers.

With the exception of the ever present possibility of a satisfactory solution of the milk problem, it would seem as if official action had gone about as far as it can in the abolishing of certain infectious diseases in Massachusetts.

Typhoid fever, scarlet fever, measles and whooping-cough can certainly be reduced still further in this state, but it must be largely through educational means through the intelligent coöperation of all the citizens of the state.

Our public health nurses, our system of school hygiene, our boards of health, our whole machinery for health protection needs to be adjusted to this one concept. The greatest need in public health today is education along

sanitary lines—the removal of old erroneous ideas and superstitions relative to the true nature of contagion and infection among the laity, and, to lesser extent, even among the medical profession. I do not believe that sanitarians stop to realize how tenacious these old ideas are, and how difficult it is for the laity to pick out the chaff from the wheat in the great sanitary grist that has gone through the mill of human intellect in the past few decades.

All who have made even a superficial study of the marvelous growth of knowledge regarding the causation and prevention of disease that has occurred in the past fifty years cannot deny that what is most needed now is not so much *more* knowledge—further light, beneficial as this will be—but assimilation of the knowledge the experts already possess. Sanitary science today is far more in need of its "Roosevelts" and "Billy Sundays" than it is of additional "Pasteurs" and "Listers." Or, as President Van Hise of Wisconsin University puts it:

"We already *know* enough to double the crops and eradicate the infectious diseases of this entire state. What is most needed now is wider practical education of the entire public so they will take advantage of the knowledge we already possess."

This, therefore, is the greatest reason why the cause of public hygiene is not better supported and the principles of both private and public hygiene no better applied by our individual citizens—lack of rudimentary training in the principles of hygiene.

Our great problem, then, as health officials, is to systematize, unify and coördinate our official health machinery so that we can turn all our resources as a unit against the ravages of preventable disease. But even if we do this to a degree hitherto unprecedented, we will most assuredly fail in the accomplishment of our great object—the freeing of humanity from the weight of needless disease and suffering—unless at the same time we succeed in enlisting the general public with us. This means hygienic education, and to bring this about we must have three great agencies.

1. The public press.
2. Individual teaching.
3. The schools.

The press is always very willing to help, but the trained worker who knows how to put hygienic facts into attractive newspaper form is a most necessary and valuable asset in publicity work. Individual teaching should be conducted by local health officials, by state officials, and especially by public health nurses. In their daily routine work, they should explain *why* certain courses of procedure are necessary and not simply say that they *must* do thus and so; for example, in regard to the question of quarantine. The schools are our chief hope in spreading the doctrine of proper living and correct application of the laws of health. These means, I believe, should form the nucleus of public health coöperation in the control of communicable diseases.

THE RELATIONSHIP BETWEEN THE STATE AND LOCAL BOARDS OF HEALTH.

DR. LYMAN A. JONES,
District Health Officer, State Department of Health, Berkshire District.

WITHIN the past few years interest in public health work has increased rapidly. There is a wider appreciation of the value and range of such work. Much has been accomplished, but the appreciation grows that there remains to be accomplished much more.

In Massachusetts this work was originally, and still is, in the hands of local boards of health, which largely constitute the supreme authority in health matters in their respective communities. Much of their work has been done without reference to its effect upon other localities than their own.

A community disposes of its waste, careless that in so doing it pollutes its neighbor's water supply.

A local board refuses to restrain milk production at a given dairy, though communicable disease may be present, because the product is sold in another town.

A health officer permits a contagious case to leave a hotel or boarding house and travel by public conveyance to another community, merely to relieve his own town of responsibility or expense.

St. Paul, in his Epistle to the Romans, says that "none of us liveth to himself alone, no man dieth to himself." This applies with equal force to communities as regards health matters, owing to the increasing complexity and intermingling of our present day life. Hence our state and national health organizations, which exercise their functions in the broader field, which seek to coördinate the work of the various units, and to supervise those larger phases of health work which extend beyond the limits of the individual community or state.

The relationship between the state and local boards of health should be a coöperative one. Each seeks to protect the public health, to prevent the spread of communicable disease, not merely to take care of sickness after it has occurred. Since their object is the same, they should work together in harmony. The local board needs the assistance of the health department in the management of those matters which extend beyond its own borders; sometimes it requires assistance or advice as to the solution of its own special problems; assistance is also needed for the furnishing of facilities—laboratory and otherwise—which many communities are themselves unable to provide.

And since the department, in large measure, is without standing in a given community, it requires the ready assistance of the local board in preventing conditions dangerous to the public health.

In other words, to secure the max-

imum results we must work together in the promoting and carrying on of public health work.

It will be helpful, perhaps, to consider briefly some of the things which we may well do together.

In the prevention and control of outbreaks of communicable disease, close coöperation is essential.

The local board of health can assist by enforcing the requirement that all such cases shall be reported immediately by physicians and householders, by investigating such cases to learn the probable source of infection, and by reporting at once to the state department as required under the law.

The state department can coöperate in the investigation of such outbreaks through the services of its district health officers.

It lends assistance in attaining a more accurate diagnosis by means of various laboratory tests, which are made without charge—the examination of nose and throat cultures for diphtheria bacilli; aiding in the diagnosis of typhoid or the discovery of carriers through Widal tests and examinations of blood, stools and urine for typhoid bacilli; making examination of sputum for tubercle bacilli, and shortly the department will begin the determination of the Wassermann reaction for the detection of syphilis.

The department also gives assistance by furnishing, without charge, antitoxin for diphtheria, vaccine for protection against smallpox, typhoid vaccine for the prevention of typhoid, anti-meningitis serum for treatment of cerebrospinal meningitis, outfits of nitrate of silver solution for the prevention of ophthalmia neonatorum, and Pasteur treatment for the bite of rabid dogs.

Through the engineering division it contributes to the prevention of disease by examination of public water supplies, to ascertain their purity, and by frequent examination of suspicious private supplies.

Warnings are given regarding the presence of contagious disease in adjoining communities, making it possible for local boards in turn to be on the alert, enabling them to place physicians, teachers and the public generally on guard to detect the first suspicious case, for the success of preventive measures often depends on immediate knowledge as to the first cases, in much the same way that a bucket of water will put out a fire when it is small, while later it may burn itself out despite every effort.

The assistance of the local boards in bringing about the early and constant use of these facilities will greatly increase their value to the public.

Health education, a very important division of health work, which hitherto has been somewhat neglected, requires active coöperation, since the public will more readily submit themselves to inconvenience and restrictions, and will more willingly observe precautions, if they understand why such things are required.

Local boards of health can assist in this work of publicity by seeking out unsanitary conditions and making them known to their citizens so that public opinion may aid in their correction.

The disease reports for a series of years may be studied, foci of disease

discovered, and, by comparing results with expenditures, knowledge of results obtained may be brought to the public knowledge, thus forming a basis for asking proper appropriations for their work.

A close watch of records and reports of disease will make it possible, by timely public warning regarding the disease, to call public attention to the use of antitoxin in diphtheria, to emphasize the greater percentage of cures where it is used early, and to the advantage of immunizing doses; in typhoid, to explain that the infection is spread through food or drink, to point out the importance of thorough disinfection of stools and urine, and that questionable water supplies should be boiled before using; to make plain that measles and whooping-cough are dangerous diseases, causing more deaths than typhoid fever or scarlet fever, and that, combined, they are often more deadly than diphtheria, not to mention untoward after effects.

Through the state department assistance may be had in the way of support and advice in the solution of perplexing problems; speakers may be secured to address meetings and organizations upon health subjects. Various pamphlets or leaflets relating to health matters are available, and a monthly bulletin is regularly distributed.

The control and prevention of tuberculosis, which at present comprises no inconsiderable part of public health work, demands close coöperation between the state and local health organizations.

Cases are or should be investigated by the local health board, a sanitary history obtained, and pains taken to insure the protection of other members of the household.

With regard to tubercular hospitals and dispensaries care can be taken to secure competent and efficient physicians and nurses.

Because the prevalence of this disease is so intimately associated with economical and social conditions, and because its duration is so often protracted, there is special need that cases be followed up from time to time to see that they are taking proper care of themselves, and that the risk of infecting others is reduced to a minimum. Visiting nurses can best be employed for work of this nature.

The state department can help by advising individual communities how best to secure these results. It supplies circulars of information and instruction. Through its employees it makes special studies as to the presence of the disease, showing where work is most necessary.

There is time but to mention in this connection the possibilities in the way of instruction in schools through school physicians and nurses, of the great value of personal instruction through visiting nurses—this is especially effective in tuberculosis work—of the use of health exhibits, etc.

Time also is lacking to discuss the various ways in which coöperation may be carried out with reference to child hygiene, vital statistics and other branches of health work.

Enough has been said to indicate how intimate should be the relations between the state department and the local boards, and how essential for successful work is a sympathetic and hearty coöperation.

THE HEALTH OF THE FARMER.

DR. JOHN S. HITCHCOCK,
District Health Officer, State Department of Health, Connecticut Valley District.

THE advocates of the "outdoor life" as the only natural, healthy and perfect existence, suggest that the farm life is *the* life to lead; that the farmer, with his feet in the dirt, reposing himself and his ills on Nature's bosom, is the man of happy health and his children near to physical perfection. If this is so we ought to be able to show it by our figures. The death-rate and the infant mortality-rate of the farming community ought to be nearly as low as that of heaven. The farmer's opportunity for fresh air, fresh food and vigorous exercise is unsurpassed, and, if our sanitary beliefs will hold water, the exercise of these opportunities should be reflected in the vital statistics.

We find they are not.

Let me illustrate, by the unfair method of the records for one year, 1914, taken from two towns, both of them small, one a dairy, and one an onion and tobacco community. In the dairy town are only a few foreign-born people; the farmers are thrifty and they pride themselves on the health and longevity of the townspeople. The onion town has more than 50 per cent. of foreign-born inhabitants, most of them farm hands. It is a prosperous and supposedly healthy community. Both towns have substantially the same number of inhabitants.

In the dairy town:

Death-rate, 17.2 per 1,000 inhabitants.
Birth-rate, 9.1 per 1,000 inhabitants.
Infant mortality-rate, 571.4 per 1,000 births.
Of the total deaths:
40% were under 1 year of age.
0% were from 1 to 10 years.
0% were from 10 to 30 years.
14% were from 30 to 60 years.
46% were from 60 years up.

In the onion town:

Death-rate, 22.9 per 1,000 inhabitants.
Birth-rate, 46.9 per 1,000 inhabitants.
Infant mortality-rate, 285.7 per 1,000 births.
Of the total deaths:
19% were under 1 year of age.
47% were from 1 to 10 years.
0% were from 10 to 40 years.
33% were from 40 to 60 years.
1% were from 60 years up.

These figures do not compare favorably with heaven.

They indicate that the farmer's baby has a poor chance for life compared with the average baby, but that if they live through the first ten years they have an excellent prospect of living to a reasonably old age.

One circumstance must be mentioned that particularly influences such figures in a farming community, that is, the fact that a good proportion of the children have become disheartened by the severity of the life at home and are filled with the illusion that city life is easier besides being fuller of money and enjoyment than country life, and they leave home at the first oppor-

tunity to try their luck elsewhere. As a consequence, the population of a farming community is generally weak in young and middle-aged adults and has more than its due proportion of children and old people. This condition is true in the dairy town above mentioned but not in the onion town, where farm wages are so high that young adults remain.

Why are these things so? What are the outs about the farm life?

There seem to be three elements in the farmer's existence that are chiefly concerned in these results, viz.: isolation, ignorance, lack of cash money.

The farmer generally lives in what the city man would consider intolerable isolation. It is difficult for him to get to stores or to gatherings of people. He is so far away that he has few visitors, his doctor, even, has to travel miles to get to him. As a consequence an inflated spirit of independence is developed. He is king on his place and he keenly resents suggestions from outsiders, particularly if unsolicited, in regard to matters touching his own daily living, such as advice concerning sanitary conditions. His doctor is a long way off and doesn't enjoy being called for minor ailments, so that every countryside has an old woman or two locally much esteemed as amateur physicians. The children pay the penalty for this by dying at an unseemly rate.

The education of the average farmer is not carried to a high degree. His isolation makes it hard to send the children to the higher grades of schools and he needs their physical help on the farm as soon as they have grown in strength to the point where they can help. He is governed by tradition rather than by scientific teaching and his fathers were not so much enlightened as he is. The local "wise man" has as many followers in subjects of life in general as the old women have in medical matters. In direct proportion with lack of education is growth of suspicion. He has bought some gold bricks and distrusts any advice or offers of assistance that appear on the surface to be disinterested. He doesn't know whom to trust, and if he has an illness and the doctor first called doesn't "cure" him in a day he wants another one at once and discharges the first one. The results are not advantageous to him.

The farmer sees an astonishingly small amount of cash money in a year. His farm provides him with the main part of his food but with little actual money. A doctor costs money, medicines cost money, consequently home medical advice and home remedies are used far beyond their proper sphere. The results are evident in the infant mortality-rate.

The farmer's wife is the hardest worked person on the farm. She has to be on the jump all the time and she has no time left for the proper care of the children. Servants cost money, and money, on the farm, is used for more stock or fertilizer, not for house servants. Servants are hard to get. In a town where there is unlimited demand for women to work in the onion fields at $9 per week, do you imagine it is easy to get a house servant for $6, or do you think that the farmer's wife feels that she can afford one? In con-

sequence, the children are left to care for themselves to a large degree and they certainly do get hold of the queerest and most unwholesome things to eat. The answer shows in the infant and child mortality-rates given above.

In late years more attention is being paid to these outs of the farmer's life. Better roads give him more associates, automobiles cut down distances, telephones give quick communication, grange meetings not only teach him methods of improving his farm and increasing his net income but they also throw him among his fellow farmers in frank discussions of all sorts of problems, including sanitation, and his wife meets other farmers' wives and learns how to get around some of her problems. Some of the suspicion is being worn away by freer contact with people.

As real education in ways of living and in sane coöperation are being introduced, it seems to me that the present black eye of farm life, the infant and child mortality-rate, will soon lose its color, and that our figures will eventually show that life on the farm is *the* real life after all.

VACATION HEALTH PROBLEMS.

Dr. Adam S. MacKnight,
District Health Officer, State Department of Health, Southeastern District.

IT MIGHT at first thought appear that the subject applied to the state as a whole. Obviously, that would be impossible, the time limit forbids any such consideration even though vacation signs are in the air. We must, therefore, take up the problems and apply them to one of the eight health districts, namely, the Southeastern, as it is now designated by the State Department of Health.

For the information of those who may not have been aware of the fact that the health district lines have been changed by the Commissioner of Health, I would say that said district now comprises, and includes, all that section of southeastern Massachusetts, within the following lines, *i. e.*, beginning at Attleboro, thence across the state to Duxbury; along Cape Cod Bay to Provincetown; the Atlantic Ocean to Nantucket Sound (including the islands of Nantucket and Martha's Vineyard), across Vineyard Sound and Buzzards Bay to the Rhode Island state line, ending at Attleboro, representing roughly three hundred and fifty miles, more or less. Five-sixths of this boundary line is ocean, bay, or sound, and the remaining one-sixth land boundary.

When these boundaries were being considered by the Commissioner of Health, and transportation and other facilities taken up by the district health officers, several of my colleagues suggested a high-powered automobile; another an aëroplane, but the bright-

est *star* in the *galaxy* was nearer right when he advised a sea-plane.

As to area, this district totals about 1,574 square miles; it includes four cities and forty-eight towns, with a population of about 375,000. The district covers three entire counties, and cuts a big swath in two other counties. No other district can show, to vacationists, what this district offers to those in search of the Goddess of Health. It is a veritable Vacation Paradise for health seekers and well deserves that appellation.

This district meets the various individual health problems on a natural therapeutic basis. It has all the elements necessary to treat all those suffering from the ills of life, the stress of work and business, and it may restore broken-down "sports."

Nature has been wonderfully generous herself. She has, in this district, given us woods, meadows, plains, and hills; rivers, lakes, ponds, and creeks; ocean, shores, and beaches; islands, sounds, bays, harbors, and capes; boats, launches, sailing and fishing vessels; yachts, tugs, and barges; life-saving stations and lighthouses; railroads, automobiles, and the old-time stages; hotels, boarding houses, and cottages galore; shell fish, fresh water, and deep sea fishing; Cape natives, and real Indians; movies, and various other tonic forms of entertainment.

To show that this district is able to care for its own people's health problems, let me state that the four cities, at the head of this district, with a population of 267,000 people, average about 2,000 people to the square mile. In the remaining forty-eight towns the average is about fifty-nine people to the square mile, and in a few towns it is still less, *e. g.*, in West Tisbury the proportion is fourteen people to the square mile.

Surely, then, in the event of outbreaks of communicable diseases, anywhere, during vacation periods, it is still possible for vacationists to escape contact, in the pursuit of health and happiness.

In the forty-eight towns of the district with their fixed normal population of about 108,000 people, it is estimated, according to local authority computation, that the district really entertains an additional 300,000 people during vacation seasons. Take, for example, Oak Bluffs, for recent years, the population has increased to 18, 20, and 22,000 people during July and August. Other towns show an almost equal increase during said months.

There are various other factors affecting public health, which we would like to touch upon at length, such as public water supply, sewage disposal, bathing, beach and certain soil conditions, which materially affect the health problems of this district, but for lack of time these cannot be taken up now.

As to occupations: Outside of the cities mentioned, and perhaps a few of the towns, it may be said that sea and shore fisheries, cranberry culture, with certain agricultural productions, constitute the main occupation. There is still another and very important one, *i. e.*, the entertainment of summer visitors, young and old, rich and poor, sick and well. This occupation is re-

garded as materially profitable, and as a result the banks, hotels, boarding houses, and general business interests prosper. Taxes are paid, mortgages lifted, and property in general kept in good order.

As it has been said that the entertainment of summer visitors constitutes the *chief* occupation during half of each year, in support thereof I would like to quote the answer of one of the natives, at a session of the local court, who, when asked "What do you people do for a living?" replied," Well! half of the year we skin the summer visitors, and the rest of the year we skin one another, the doctor excepted." However this may be, there are two other important occupations, namely, farming and navigation, the latter by no means the least.

It is a remarkable fact, not generally known, that the vacationists come from all parts of this country, north, east, south and west. Even the Canadian Provinces, as far northwest as Manitoba, Saskatchewan, and British Columbia, send their quota. They also come from Europe, Australia, and India. This year, on account of the war and the advice of the Washington authorities as to passports, etc., numbers of people will seek this favored resort. On the other hand, on account of the money stringency, *i. e.*, lessened dividends, shrunken stock, and other business depressions, the people who might have gone to the Panama Exposition will content themselves on the Cape, and still further add to the seasonal quota, large as it is.

It is almost needless to remark that vacations should be carefully and studiously planned long before the advent of the vacation season. Not only by families, but by individuals, in order that the greatest good to the greatest need shall obtain. Locations should be well chosen; expenses carefully estimated, and positively healthful places secured. Convenient transportation facilities should not be overlooked. I would suggest that anticipated vacation sites and locations should be thoroughly investigated by prospective vacationists, at other than vacation seasons, when Nature is not "smiling," Note the water supply, milk supply, and sanitaries. Inquire when the cottage was last occupied? by whom? for how long? were there any illnesses? if so, of what nature? Call on the board of health, the local physician; communicate with the district health officer. Find out all that is to be advisably known as to the peculiar health problems of that particular locality where it is proposed the vacation shall be spent. It will pay you to do it.

Communicable diseases follow us everywhere, up and down the length and breadth of any district. They may be encountered on the trains, railroad stations, steamboat landings, hotel gatherings, halls, schools, and churches, in fact, wherever human beings are found, singly, or in groups.

I would suggest that vacationists, as a class, wherever they go should, as a preventive measure, avail themselves of typhoid prophylactic inoculation; this is a positive measure of safety by way of preventing typhoid fever, which is chief among the vacation diseases.

Let me say in closing that the vacation health problems of the dis-

trict are not by any means as serious now as in past years. The public is better informed. Boards of health are waking up to their responsibilities. Physicians are more alive to the transmission of communicable disease, and methods concerned in their prevention. Last, but not least, this district has the promise of a Barnstable County Hospital for the care of communicable diseases, including tuberculosis. When this hospital shall have been established, other vexing vacation health problems will have been solved.

THE CONTINUING PROBLEM OF VACCINATION.

Dr. Samuel H. Durgin,
Past President, Massachusetts Association of Boards of Health.

THE annual application to the legislature of Massachusetts for the repeal of its vaccination laws, and the frequent demand upon our busy professional men to defend said laws for the last twenty-five years, are well known. The members of this association need no argument from me to convince them of the wisdom of those laws or the necessity for their enforcement. The association is also aware of the many unfounded claims and charges made against vaccination by the agitators who make these annual appeals to the legislature. One of their claims is that vaccination does not protect. Another is that it is a dangerous procedure and produces other diseases in the vaccinated person. The first claim is contrary to the scientific and practical experience of the civilized world. The second is not only as weak as the first, but is presented to the committees by such evidence as exhibiting sick children and invalids to the committees and charging such illness and injury to vaccination, without sufficient evidence to establish a connection. This claim of injury from vaccination deserves our particular attention as a public health organization.

Massachusetts formerly had an excellent vaccination law, and, although it suffered a mutilation a few years ago at the behest of anti-vaccination agitators, there is enough of it left to warrant our respect and defence. Massachusetts also produces and furnishes free to all of her people a pure, safe and effective vaccine lymph, so that there is no longer any more excuse for accident or injury from its use than in any other of the minor and simple surgical operations.

Under these circumstances it seems to me that the state is in duty bound to extend her beneficent efforts in provisions for the protection of her people against contagious diseases by definitely ascertaining whether or not her people are really suffering the imposition and injury charged by those who are opposed to vaccination. This may be by a provision of law requiring that all cases of supposed

injury from vaccination within the state be reported forthwith to the State Health Department for immediate investigation and record. I would continue this work for a period of three or five years to secure the facts necessary to establish the truth or falsity of the charges made by the opponents of vaccination. In this way the most reliable facts may be secured for the future guidance of the people and the state. If the facts are against vaccination it should be abandoned. If otherwise, the facts will show the wisdom of the law and its enforcement, protect the good name of the state's vaccine product, promote the confidence and welfare of the people and check up some of the mistaken ideas about vaccination. To this end I desire to present the following resolution:

Resolved, That in the opinion of the Massachusetts Association of Boards of Health legislation should be secured by which all cases of supposed illness or injury from vaccination within the state of Massachusetts shall be forthwith reported to the State Health Department for immediate scientific investigation and record, and continued for a sufficient period of time to secure the facts to show conclusively whether or not any ill effects ever follow as a result of a clean vaccination with proper lymph and properly cared for.

I should be glad to hear an expression of opinion from members of the association, and, if favorable action is taken, I should offer a motion for a committee to take the matter in hand.

The resolution proposed by Doctor Durgin was seconded and unanimously adopted. It was moved and seconded that a committee be appointed by the chair to take such action concerning the resolution as might be deemed advisable.

THE CONTROL OF CANCER.

Dr. Edward Reynolds,
Vice-President, American Society for the Control of Cancer.

I APPRECIATE the opportunity of speaking to so representative a gathering as this on the subject that interests me particularly, and will try to go straight to the heart of the subject of cancer as a preventable disease, and a disease which has the largest mortality of any disease of adult life. Infant mortality and the mortality of tuberculosis at all ages, and during epidemics the mortality of some of the contagious diseases, are larger, but as a steady diet cancer kills more adults than any other disease. Of those who attain the age of forty, one individual in every eleven dies of cancer—one woman in every eight, one man in every fourteen. It brings it pretty close home. How many in this room will die of cancer if nothing is done about it? It kills 75,000 individuals in the United States alone in a year.

The executive council of the Ameri-

can Society for the Control of Cancer, a body which contains in its membership between twenty-five and thirty surgeons and pathologists of eminence gathered from all over the country, has debated carefully the percentage of cancer deaths that are preventable, and agrees that while no such gain can be expected immediately, yet under ideal conditions of education, if all the laity knew all that the laity ought to know of cancer, if all the medical profession were educated to the latest knowledge, 60,000 of those 75,000 deaths should be preventable. As Professor Winslow has lately said, we shudder at the needless waste of life in Europe today. Such needless waste of life as that I speak of Professor Winslow stigmatizes as senseless and unnecessary as that of war. The work of the most progressive states and communities shows that already a large proportion of boards of health are feeling that the chronic diseases are as much within their field as the contagious diseases, which at first made so large a proportion of their work. For instance, in Kentucky, Virginia, Louisiana, West Virginia, Michigan, Nebraska, New York, North Carolina, Kansas, in the city boards of New York, Rochester and other cities, and in the state of New Hampshire, close at home, the boards have already taken up the education of the public on the subject of cancer. It seems as though so important a matter of public education should fall within the activities of the local health authorities.

The great obstacle in the cancer campaign has long been the belief that the disease is uncontrollable. Such is not the fact today, and certainly health officers should be among the first to realize the latest knowledge. Our recent knowledge of cancer revolutionizes our ideas of its natural history to a very large extent, in two important particulars especially: first, cancer is at first a localized disease and becomes generalized only later. It is much like an epidemic of measles, let us say, in a city. While there is one case of measles in the city its isolation and the disinfection of its surroundings is easy and does away with an epidemic. If the population of the city flock in and out of that house from distant quarters, shortly there are isolated, scattered centers of measles all over the city, and the epidemic is uncontrollable. That is just the situation with cancer in the human body. While it is in one spot the isolation and disinfection of that one spot does away with the disease; when it has become generalized the disease is uncontrollable.

Not long ago the medical profession taught the diagnosis of cancer only after it was an uncontrollable disease; today we teach the diagnosis of cancer in its localized and controllable stages. Perhaps the foundation principle of our newer knowledge is in the fact that there is no sharp line between the benign and the malignant; that, on the contrary, the malignant diseases which we speak of collectively under the popular term of cancer ordinarily originate in benign tumors or in benign ulcers or irritations. Any persistent lump, ulceration or irrita-

tion should be considered so far potentially malignant as to demand serious consideration and careful diagnosis.

In the amount of time at one's disposal here it is impossible to go into the diagnosis of the several varieties of cancer in the many localities in which it appears. I have with me a certain—I am sorry to say rather limited—supply of pamphlets which tell what the American Society for the Control of Cancer is doing, and of pamphlets which tell what everyone should know about the disease of cancer and its diagnosis.

I want to say a word myself of the American Society. Beginning two years ago in New York, it has been endorsed by every one of the great professional bodies, and with its motto of "Opposition to none, Coördination and Coöperation with all," it is today working in coördination with all the other societies against cancer in the United States. Its objects are two. It does not conflict with the research bodies, but purposes to help them in coördinating statistically the results which they obtain, to follow statistical investigations into the origin, source, and method of communication of cancer, which so far has never been done on a large scale; and finally to publish to the laity the assured practical facts which we have with regard to the ease with which most cancers can be diagnosed in the early stages, and with which almost all can be controlled by trifling, non-mutilating operations if taken in the localized stage. We think that along both those lines health officers should be ready to coöperate. Many are doing that already; we wish all of them to do it. In the line of statistical research we hope that they will coöperate by seeing that the mortality reports are complete, that forms, which are uniform with those which have been adopted by the federal government at our suggestions and after preparation by high statistical authorities, are put into use as rapidly as practicable, since the value of such reports for statistical investigation depends entirely on their uniformity. We hope that they will aid in popular education, as no one can do better by the dissemination through their communities of printed information upon what every member of the laity should know about cancer in carefully considered form, either in your own bulletins or in the form of leaflets. We are prepared to coöperate with them in both directions, by furnishing them with copies of the approved forms for statistical reports and with material for publication to the laity in forms which have been carefully and authoritatively prepared. We will send for distribution, so far as our income permits, leaflets already printed for distribution, but we are prepared to furnish to any extent the material for publication for the press to anyone who will aid us in disseminating it. We are further prepared to furnish lecturers to any community which will furnish the audience, and we especially wish to impress upon health officers the value to the community that can be obtained by giving the nurses under their direction some education on this subject. Remember

that your nurses in their hospital training have seen the disease only in its late and incurable form. Remember than as they go about among the population, if they can have the information of how to prevent the disease, they can do more than anybody else to cut down its tremendous mortality, and worse than its mortality, its incalculable suffering, to somewhere near the ideal to which it should be cut down.

SOME PROBLEMS OF THE HEALTH OFFICER OF A SMALL CITY.

FRANCIS GEORGE CURTIS, M. D.,
Chairman, Newton Board of Health.

THE work of the health officer of a small city lies midway between that of the man in a large city on the one hand and of the country health officer on the other; he has his congested areas, differing only in degree from those of an urban community and his sparsely settled districts which closely resemble the farming districts of the country, and as a result he has the problems of both to solve.

He must, therefore, be an all-round man and the rules under which he works must be more or less elastic and fitted to cope with very different conditions, a fact which he must always remember when dealing with the various questions which arise in his work.

Then, too, owing to the fact that he is usually short handed and lacks the assistance of the various divisions upon which the urban health officer can rely, he must be prepared to act in many different capacities and yet, in spite of this his community expects his work to compare favorably with that of urban departments which are highly specialized.

He is supposed to be an authority upon every subject which bears, no matter how remotely, upon public health and to be able to give the public information upon matters such as the best means of ridding a house of fleas or bedbugs, whether the city water will cause rheumatism, or whether Johnny is liable to catch scarlet fever if he walks by a house in which there is a case of that disease.

When we consider further that the average surburban health officer has, up to the present time, usually had little or no training in public health work when appointed and has been compelled to learn his profession while he is practicing it, and further that he is seldom adequately paid for his services, we can understand that his lot is by no means an easy one.

It would be almost impossible, in a paper of this length, to consider all the questions which present themselves to the health officer for solution, and I shall not attempt to refer to more than two which seem to me of importance, and try to indicate what may be done to solve them.

One of these may not be, strictly

speaking, a health problem, but it is none the less very real and may be the cause of much trouble, and this is the question of the annual appropriation; of obtaining enough money to run the department properly.

For some reason best known to themselves, although it is often unintelligible to the board of health, the aldermen who hold the purse strings are very prone to believe that a health department can be run chiefly on air with a small intermingling of money, and to feel that when it is necessary to economize, the health department is a good place to begin. As a consequence of this, the estimates for the maintenance of the health department are frequently so cut and pared down that, when they finally emerge, they are almost unrecognizable to the men who made them up. It would seem to be almost an axiom that the men who are familiar with the work know more nearly the cost of doing it than men who know little or nothing about it, but for some reason this does not seem to be accepted.

In spite of this policy, the health department is held responsible for the care and well-being of a community of from 35,000 to 40,000 people and is frequently severely criticised if it fails to make every dollar do the work of two.

To the honor of the men who hold positions as members of boards of health and health officers, it can be said that they cheerfully accept the responsibility and seldom fail to make a creditable record.

The solution of this question is a difficult one, for if the department does well with a mutilated appropriation one year, it is very difficult to persuade the city fathers that more in proportion should be granted for another year, while on the other hand, if the department fails to keep within the limits of the appropriation, it may be severely criticised.

The health officer must impress upon his community that money spent in preserving the public health is money well invested, that disease—preventable disease—is uneconomic. It does not pay, in any sense of the word, to have an outbreak of disease in a community for, in addition to the actual outlay entailed by caring for the sick, there is a further loss due to the upsetting of normal conditions and to the curtailment of the productive power of those who are ill. The best insurance against this loss is an adequate appropriation for the health department and an efficient health officer to oversee the expenditure.

It is an encouraging fact that some communities are beginning to realize the truth of the old saying that "Health is wealth," and to understand that a clean bill of health is a valuable asset, and that the city or town which establishes a reputation for taking care of the health of its citizens, and lives up to it by showing a decreased morbidity, has a distinct advantage over its less careful neighbor. When this fact is more clearly understood, it will be easier to obtain proper appropriations for the health department, and the health officer can do much to bring about the desired end by showing his community results due to efficient work.

Above all a determined effort should be made to keep within the annual appropriation, but if this is impossible, as it often is, the health officer must be able to show that the overdraft was due to some unforeseen emergency and not to carelessness in handling the appropriation. For this reason a careful account of the annual expenditure should be kept by the department, so that the health officer may be able to justify his outlay.

In making the annual report a clear statement of the different objects for which the money has been spent should be given. It is not necessary to put down each separate bill in this statement, it being sufficient to classify them under the various headings. The statement of expense is valuable, as it enables the taxpayers to know for what objects their money has been spent.

The other problem which we are to consider, viz.: the prevention and care of communicable disease, is of course more strictly a public health matter, and has been chosen because so many of the functions of a board of health have a bearing upon it either directly or indirectly.

In this also there is a marked difference between a large and a small city, for in the latter the health officer has a more personal acquaintance with conditions in his community than he can have in the former. This is true from the very nature of things, for the man with 35,000 or 40,000 people under his care must have a more personal knowledge of matters pertaining to them than the man who has the care of 75,000 or 100,000. I believe that this personal familiarity has a great bearing upon the matter, and often helps the health officer in carrying out his work successfully.

In handling an outbreak of communicable disease the family physician constitutes what may be called the first line of defence; it is he who usually sees the case first and much may depend upon the promptness and correctness of his report and it should be made easy for him to report his cases.

It is a good plan for the health officer to make himself familiar with the practicing physicians of his community and know all he can about them so that he can tell who will help and who antagonize him.

He should join the local medical club, if there is one, and take an active part in its work, so that he can put before its members the point of view of the public health man, a point of view very different from that of the practicing physician and one of which the latter is often woefully ignorant.

It is really surprising to see how helpless a man, who has been in active practice for a quarter of a century or more, may be when he discovers a case of a disease dangerous to the public health in his practice, and how absolutely incapable he may be of understanding the point of view of the health officer.

If a physician neglects to report a case of a disease dangerous to the public health promptly, I believe it is more often due to this ignorance or to carelessness than it is to intent or a desire to conceal the case, and more can be accomplished by a personal note

calling attention to the neglect than by haling the offender into court. Here, again, the personal knowledge which the health officer of a small city can have of the physicians in his community will help him to decide what course to follow.

It is not necessary to tell this audience of the steps to be taken to prevent an outbreak of disease nor of the various methods of checking it, when once it has started, but there is one point to which I wish to draw your attention; that is the great lack of uniformity in the methods of control which obtain in different communities. These differences are very marked and tend to cause the public to wonder whether the men in public health work really know what they are doing and why they do it.

Take for example the following questions: The treatment of the adult well members of the family in which there is a case of communicable disease; the attendance at school of immune children during the continuance of the disease; the closure of the schools as a means of checking an outbreak and the value of terminal room disinfection as ordinarily carried out by a board of health. Each of these questions is of great practical importance, and yet every one knows what a wide divergence of opinion there is in regard to them even among boards of health.

While it is true that these questions are fully as important to the urban as to the suburban health officer, yet I believe that they are brought home more closely to the latter because of that same more intimate association, to which I have already referred, which he has with the men of his community.

The men with whom he comes in daily contract ask him, "Why?" They are from Missouri and want to be shown, and he must be able to answer their questions intelligently and convincingly. If he can convince them that he is right, they will work with him and help him; if he cannot convince them they will oppose him, if not actively at least passively, and his work will be harder.

One great difficulty which a health officer encounters in his work is the combating of peculiar ideas in regard to communicable disease which persons have learned from their family doctor and, because he is the trusted family doctor, they believe what he says and are inclined to disbelieve the health officer.

It will not do for the health officer to say that he personally believes that his course in these matters is the right one, especially if the communities surrounding him do differently; he must have some authority to which he can refer. If he is right, the opposite practice in his neighbor city weakens him unless he can show that his neighbor is in error.

It is for these and similar reasons that I believe that there should be some definite course of procedure adopted upon these questions. I do not mean that iron-clad rules should be laid down which would prevent independent action and check progress but rules could be adopted to which the

health officer could refer as his authority, showing what the best practice at the present time advises.

It seems to me that this association, made up as it is of men in all branches of the service, state, urban, suburban and rural, is admirably fitted to do this work and I hope that in this, the twenty-fifth year of its existence, it may see fit to do so.

INFANT MORTALITY FROM THE STANDPOINT OF THE STATE.

DR. WILLIAM HALL COON,
District Health Officer, State Department of Health, Northeastern District.

IN PRESENTING the problem of infant mortality in this Commonwealth I shall forego the temptation to compare the situation as it exists, with calamities and disasters attended by great loss of life, and only present to you the facts as they appear —facts so significant as they stand that they need but little comment other than that they express conditions not at first easily grasped because seemingly possible.

These then are the facts, that during the years 1903–12 108,000 babies died in Massachusetts; that in 1912 (the last year for which registration statistics are available) for every 1,000 babies born 116 failed to live through the first year of life; and that in the same year 20 per cent. of all deaths were among infants under one year old.

It is rather startling to know that over 10,000 babies die each year in Massachusetts, but these facts assume further importance when the deaths among infants are compared with the deaths from certain other causes. In 1912, again, the mortality from typhoid fever had been so reduced that but 5 out of each 1,000 deaths were due to this disease; diphtheria was responsible for but 8 out of each 1,000 deaths; tuberculosis of the pulmonary form caused 80 out of each 1,000 deaths; while infant mortality, if I may use the term here, was responsible for 200 out of each 1,000 deaths registered.

In other words infant mortality was responsible for forty times as many deaths as typhoid; for thirty-seven times as many deaths as were caused by diphtheria, and for two and one-half times as many deaths as were caused by pulmonary tuberculosis.

These statements, I trust, will serve to show the importance of the problem of infant mortality in this state, even as they express the relative unimportance of two of the communicable diseases, relatively unimportant as far as these diseases are at the present time factors in the destruction of human life. As a matter of fact the situation is this, that in 1912 the combined deaths from tuberculosis, typhoid, diphtheria, measles, scarlet fever and smallpox were but half those from infant mortality.

The low death-rates from the diseases just mentioned are to the credit

of those agencies responsible for their being so. Just how much lower they may be brought I am not sure, but it is my conviction that, however much the state may do, we have come to that point where a further reduction in the death-rate from the diseases named will be much more gradual and that no abrupt decrease may be looked for. The knowledge gained concerning the modes and dangers of infection have pointed out the way to methods of prevention until we have now but to apply these methods to hold the ground already gained.

But while state medicine has concerned itself in decreasing the mortality from certain of the communicable diseases, other conditions attended by a high death-rate have received but little or no attention. Among these conditions are those responsible for infant mortality. These conditions, to be sure, have but little relation to general medicine but they have a very distinct relation to preventive medicine for it is by overcoming these conditions that lives are to be saved and it is quite as important, it seems to me, to prevent a death in infancy as to prevent infection in adult life.

While the state as a whole has not, up to this time, concerned itself in the problem of infant mortality, some of the cities have taken up the work and have set an example to the state as to what may be accomplished through proper effort. Boston, through its board of health and the Milk and Baby Hygiene Association, has succeeded in reducing its infant mortality from 133 deaths per 1,000 births in the period 1906–10, to 103 in 1914. Holyoke has done excellent work and is, as far as I am aware, the only city in the Commonwealth in which an annual appropriation is made by the municipality for infant hygiene work. If I do not mention here other communities which are also doing infant hygiene work, it is because I have not had the time to make full inquiry into the subject.

In considering the subject of this paper I have been much interested in reading the report for 1914 of the society in New Zealand for the health of women and children. New Zealand, you know, has the lowest infant mortality rate in the world, 51 per 1,000, a very low rate, indeed. Here the work is carried on by a private organization subsidized by the government. The New Zealand authorities were asked if this very low rate of 51 per 1,000 was not due to some exceptional conditions associated with the islands. The authorities answered that it was not due to the climate for the climate was much the same as in other localities outside of New Zealand where higher rates prevailed. That it was not due to the milk supply for that was not remarkably good, and that it was not due to sanitation for the sanitation of New Zealand cities was no better than in other cities showing higher rates. The reason, and the sole reason given for the low mortality rate, was special and practical education by nurses trained for the work.

These nurses, twenty-seven in number, serve a population of approximately 450,000 distributed among twenty towns. Their work is to advise the mother previous to the

birth of her child, and many mothers apply for such service; to advise the mother in the care of the child after birth, and to follow up this advice by other visits during the first year to see that the instructions given are carried out and that the child continues well. The stated object of this society may well be considered in the prevention of infant mortality. To quote, "The society is less concerned in reducing the death-rate than in improving the health of the people. As a health society we are more interested in firmly establishing the all-around fitness of the 25,000 annual new arrivals who will live than we are in reducing the potential deaths from 2,000 to 1,000. However, the problems are intimately related since the simple hygienic measures which tend to prevent death in babyhood are also the measures which lay the foundations of strong healthy minds in sound enduring bodies."

The problem in Massachusetts is in no wise different from the problem in New Zealand. What has been done there can be done in our own Commonwealth. Nor is there much difference in opinion as to how this work may be best carried out, although it should ever be borne in mind that this work of saving babies, while one of the simplest and most direct parts of preventive medicine, is work that should be carefully planned and so supervised that it will always be not simply work directed toward the prevention of infant mortality, but work directed toward keeping well babies well, for upon this result will the success of the work be measured.

As the problem is state wide such a supervision as that just mentioned should be exercised by the central health authority of the state and from this authority should be directed the educational and publicity work necessary to the campaign.

In the field the work should be where it belongs, in the hands of public health nurses, nurses specially trained for their duties. There can be no question but that such a system as the one just outlined would result in a very short time in a material reduction in the death-rate, not only among infants but among children of all ages.

Ten thousand babies die each year in Massachusetts. It is high time that we gave to this fact the consideration it deserves.

REPORT OF THE COMMITTEE ON VENEREAL DISEASES.

The Committee on Venereal Diseases, appointed by the Massachusetts Association of Boards of Health at the January meeting, met last Wednesday in the office of the Boston Board of Health and drew up the following resolutions to present to this society:

First: That syphilis and gonorrhea be made reportable diseases.

Second: That a Wassermann laboratory be established by the State Department of Health to which Wassermann workers in health departments may go for instruction that technique may be uniform and that the establishment of laboratories throughout the state may be encouraged.

Third: That the Legislative Committee of the

Massachusetts Association of Boards of Health be instructed to draw up a bill with the coöperation of the State Department of Health, the Massachusetts Medical Society and the Homeopathic Medical Society, requiring that all information and all reports, in connection with persons suffering from these diseases, shall be regarded as absolutely confidential and shall not be accessible by the public, nor shall such records be deemed public records.

Fourth: That inquiry cards be sent to the boards of health of each city and to the physicians of towns requesting a report on the number of cases of venereal diseases under the care of physicians.

Fifth: That an appropriation of one hundred and fifty dollars ($150) be requested for the above items.

This money appropriation was asked of the society by this committee for the purpose of establishing a state-wide campaign on this venereal problem, this money to be used by the committee in obtaining all information possible as to the amount of venereal disease in the Commonwealth; and to urge upon various municipalities whose boards of health have members in this association, to start the full diagnosis of both syphilis and gonorrhea; and, furthermore, to urge upon the hospitals the importance of treating these cases. Most of them now are refused admission in hospitals. This committee regard it as essential that these diseases be made reportable diseases either by name or by number, but there must be legislative action to make these private records, or else the work will probably be partly nullified.

This committee consisted of Doctor Mahoney of the Boston Board of Health Department; Doctor Curtis of Newton; Doctor Palmer of Framingham; Doctor Kennedy of New Bedford, and myself. All were present at this meeting at which these resolutions were adopted, with the exception of Doctor Kennedy. And, furthermore, at our invitation the health department of the state sent Doctor Hanson as their representative to this meeting. There was absolute unanimity in the committee on these resolutions.

FREDERICK H. BAKER, M. D.,
Chairman.

It was moved that the report of the committee be accepted as a progress report and referred to the Executive Committee with power to act.

THE PRESIDENT: We would be remiss in closing this very profitable and interesting day if some word were not said in appreciation of that person who was the inspiration of these meetings and their guiding spirit, namely, Prof. George C. Whipple, who, though he has modestly kept in the background, has borne the burden and the heat of the day in attending to the many details necessary to prepare the program, and to rent the hall, and to cook the dinner, and what not.

On motion the association adjourned.

Book Reviews.

A Manual o Personal Hygiene: Proper Living upon a Physiologic Basis. *By American Authors. Edited by Walter L. Pyle, M. D., Philadelphia. Sixth Edition, Revised and Enlarged. 12 mo. of 543 pages, 138 illustrations. Philadelphia and London: W. B. Saunders Company, 1915. Cloth, $1.50 Net.*

Previous editions of this important book have been reviewed in this JOURNAL. Each revision has served to make it a more inclusive and better proportioned work. The contributors are men of high standing and speak with clearness, good sense, and authority. The editor himself writes of the eye in a valuable chapter that no longer appears unduly extended in proportion to the other sections as it used to do. Doctor Courtney's treatment of the hygiene of the nervous system is admirable; so is Doctor Goldthwait's discussion of posture.

The chapter on Food—Adulteration and Deterioration, by Doctor Wiley, was introduced in the Fifth Edition. The writer might have distinguished more carefully between food which is injurious and that which is merely fraudulent. A new chapter on the Hygiene of Infancy follows that on Food. It is a useful section and it is not likely that any harm will result from a ludicrous mistake on page 460: "for each occupant of the room there should be from 500 to 1000 cc. of air-space." What if they all inhaled at once? A manual of personal hygiene necessarily consists pretty largely of truisms; every intelligent man knows more health principles than he has time to practice. But it is none the less desirable to have books like this one, for the reader is able to find, in the midst of so much that is familiar, the really helpful and novel suggestions that he can take to heart.

Percy G. Stiles.

Health Department Reports and Notes.

REPORTS

Springfield, Massachusetts.

The report of the Springfield Board of Health for the year 1914 is brief and interesting. In Springfield a city hospital is maintained as a part of the department of health. This hospital and the medical inspection of school children while maintained by the health department are conducted under separate appropriations. Together, they received more than twice as much as the department received for its regular work. The appropriation for real true public health work amounts to about 17 cents per capita—which is surely not high in view of a total death-rate of 14.49. In Springfield, as indeed in most every city, an increasing interest in the obtaining of a safe milk supply has been evident. It does not appear from the report whether the tuberculin test is employed in the dairies supplying Springfield. The infant mortality-rate for Springfield is 96.8, having been reduced from 100 the previous year and from the efforts which are being made it seems not unlikely that it may be further reduced.

Harrisburg, Pennsylvania.

A large portion of this report is given to an explanation of the reorganization of the health department which was effected during the year 1914 and to a discussion of the things the department has done in the past year and what it hopes to do in the coming year. The only difficulty with this sort of a report is that members of the city council to whom it is addressed are not likely to read it, or if they do, will not be as ready in appreciating the points which ought to be emphasized or would be desirable. The outside back cover page of this report shows a number of interesting facts about Harrisburg such as population, wealth, public improvements and the like. One page of the report is given to the comparison of death-rates of various Pennsylvania cities. This shows Harrisburg ranking third with a rate of 13.9 while the largest cities of the state, Philadelphia and Pittsburgh, are given as 15.7 and 17.01 respectively.

Louisville, Kentucky.

The report of the Louisville Health Department shows that in this city of 250,000 a progressive and aggressive department is accomplishing a great deal in its efforts to protect the health of the city.

That part of the report dealing with the control of the milk business indicates that this division is maintaining a very useful service. It is to be noted with some regret, however, that the flash method of pasteurization is still recognized as alternative with the, now much more generally favored, holding method.

The vital statistics are in the latter part of the report and are not so extensive or detailed as to burden the report with a vast mass of figures which will never be looked at.

Large plain print in the body of the report, together with distinctive headings for various topics discussed, make it easily readable and attractive. A number of short but telling statements like the following indicate that the health officer appreciates in a broad and enlightened fashion the modern problems of public health:

"Tenement House Inspection Does Not Solve Housing Problem."

"Another year has passed and we still have no fly ordinance."

"Notwithstanding the heavy burden now placed on the two visiting school nurses, they are doing excellent work and getting good results."

NOTES.

A Score Card for Privies on Dairy Farms.—Each dairy farm inspector of the District of Columbia is now required to fill out in duplicate a score card of the kind shown below for each farm inspected. One copy is attached to the regular dairy farm score card and is left with the dairy farmer; the other copy is sent in to the health office with the duplicate of the dairy farm score card. In the office it becomes a part of the record of the dairy farm to which it relates. The use of this special score card for privies on dairy farms is temporary, the plan being to incorporate a score for privies in the next edition of the regular dairy farm score card. As there are now more than twelve hundred dairy farms shipping milk into the District of Columbia, the educational work of the Department with respect to the sanitation of privies on dairy farms will be widespread, and it should have an influence on each immediate neighborhood in which a dairy farm is located.

HEALTH DEPARTMENT OF THE DISTRICT OF COLUMBIA.

DAIRY AND DAIRY FARM INSPECTION SERVICE

Score Card for Privies on Dairy Farms.

Dairy Farm No..... Date.....

	Perfect	Allowed
1. Location	3	
2. Construction	3	
3. Cleanliness	2	
4. Disposal of Contents	2	
Total	10	

Remarks:.....

.....

(Inspector's initials)

INSTRUCTIONS TO INSPECTORS.

A privy to be scored perfectly should conform to the following:

Location:

At least 100 yards from any source of water supply, dairy, and dairy barn.

On ground the slope of which is away from the source of water supply.

Construction:

Floor in front of the receptacle should be made of some non-absorbent material, above the surface of the surrounding ground, and incline toward the door.

Receptacle for filth should have adequate means of access for cleaning the receptacle and removing the filth therefrom, and be constructed of such material and in such manner as to prevent absorption of the filth or any escape of the filth by leakage.

Openings in seats should be provided with covers.

All openings should be effectually screened to prevent insects from gaining access to the filth, and the door should be provided with a weight or spring so as to keep it closed at all times.

Cleanliness:

All fecal matter and urine should be deposited in the receptacle provided for the purpose, and general rules for cleanliness applied.

Disposal of Contents:

All contents should be deodorized during their retention in the receptacle, should be removed before the receptacle is completely filled, and should be buried in dry earth upon removal.

A Method of Rating Milk Dealers.—The figures given below illustrate a rather unusual method of rating retail dairymen, which is used at Dayton, Ohio. This consists in combining the ratings on several items, quality, bacteria, content, and sediment and also on dairy and of milk plant inspection.

Every three months a list of dairymen is made up according to locality, the one with the highest grade being placed first and so on down the list.

The key is as follows:

QUALITY.

Good	25 points
Fair	20 points
Medium	12 points
Poor	5 points

BACTERIA.

Below 10,000	25 points
10,000 to 100,000	20 points
100,000 to 500,000	15 points
500,000 to 1,000,000	10 points
Above 1,000,000	0 points

SEDIMENT.

No sediment	25 points
Small amount	20 points
Medium amount	15 points
Considerable amount	10 points
Large amount	5 points

MILK PLANT AND DAIRY SCORES.

90 to 100%	25 points
80 to 90%	20 points
70 to 80%	15 points
60 to 70%	10 points
Below 60%	0 points

The following specific cases well illustrate the working of this plan.

PASTEURIZED MILK.

Name	Qual.	Bact.	Sed.	Milk Plant score	Total score
A	20	20	20	23	83
B	15	22	25	20	82
C	15	15	20	20	70

CERTIFIED MILK.

				Dairy score	
A	20	25	25	25	95
B	25	20	23	25	93
C	20	20	18	15	73

RIVERDALE.

Name	Qual.	Bact.	Sed.	Milk plant score	Dairy score	Total score
A	20	20	20	20		80
B	10	20	20	21		71
C	12	15	10		15	52

*

Alcohol and the Public Health.—Dr. S. S. Goldwater, New York city's commissioner of health, has replied to the critics of his announced campaign against alcoholic drink with a statement that seems eminently to justify his position. The duty of his department, he shows, is to guard the health of the people in every possible way. While it has the authority to promulgate certain rules to meet undesirable conditions and emergencies, interference with the drinking habits of the public would be beyond its powers. But it is entrusted with the task of educating the people concerning menaces to their welfare. Publicity regarding the dangers that lurk in adulterated and contaminated milk has prevented much sickness and saved many lives. Preaching the gospel of fresh air and cleanliness has exerted a like salutary effect. The crusade against drug using has greatly benefited the community. These are all recognized as proper subjects for the department's campaign of education. The evils resulting from alcoholic indulgence are equally conceded, and why, therefore, asks Doctor Goldwater, is it not the duty of the officials to lay these facts also before the people? A diminution in the consumption of alcohol, he says, would mean less tuberculosis, less poverty, less dependency, less pressure on hospitals, asylums and jails. Drinking mothers lose twice as many babies as do those who are sober. More alcoholism is found in the parents of feeble-minded children than in the parents of the normal. Alcohol "impairs memory, multiplies industrial accidents, causes chronic disease of the heart, liver, stomach and kidneys, increases the death-rate from pneumonia and lessens natural immunity to infectious diseases."

This indictment is founded on scientific fact. There are those who believe the day will come when health officials generally will combat the drink evil as vigorously as they are now attacking tuberculosis and other scourges of the human race.—*Pittsburgh Gazette-Times.*

Public Health Notes.

Pan-American Scientific Congress.—The Preliminary Program of the Second Pan-American Scientific Congress to be held in Washington, December 27 to January 8, has been issued by the Department of State. The meetings of the Congress will be held in the Pan-American Union. The meeting comes at this time and place in accordance with the resolution of the First Pan-American Scientific Congress which was held in Santiago, Chile, December 27, 1908, to January 5, 1909.

The members of the Congress include the three following classes:

I. The official delegates of the countries represented.

II. The representatives of the universities, societies and scientific bodies of the countries represented.

III. Such persons in the countries participating in the Congress as may be invited by the executive committee with the approval of the countries represented.

The Congress will be divided into the following sections:

1. Anthropology.
2. Astronomy, Meteorology and Seismology.
3. Conservation of Natural Resources, Agriculture, Irrigation and Forestry.
4. Education.
5. Engineering.
6. International Law, Public Law and Jurisprudence.
7. Mining and Metallurgy, Economic Geology, and Applied Chemistry.
8. Public Health and Medical Science.
9. Transportation, Commerce, Finance and Taxation.

General Gargas is chairman of the Section on Public Health and Medical Science. The program for this section is subdivided under the following main headings, each of which is again subdivided:

A. Public health, including infectious diseases, their modes of infection and their control; and nutritional diseases with their bearing upon public health.

B. Vital statistics including both birth and death registration and morbidity reports.

C. Sociological medicine. In this portion of the program will be included the various topics referring to the educational features of public health work.

D. Sanitation.

E. Conference on laboratory.

Dr. William C. Woodward, former president of the Association and health officer of the District of Columbia, has been appointed by President W. T. Sedgwick as the official delegate of the American Public Health Association to this Congress.

*

Educational Nursing.—The June issue of *The Nurse* contains an article outlining the work done by the Association for Improving the Condition of the Poor in New York City through the agency of the public health nurse. A great deal of importance is attached to prenatal work among mothers. If necessary the Bureau sends a visiting housewife to help with the heavy work, arrangements are made for the patient to be examined by the physician, and home or hospital care is planned.

Affiliated with the work of the Bureau of Educaton is the Caroline Rest Home for mothers and babies. This home is open all the year to mothers in poor physical condition and to those who need training in the care of their babies. The Rest is thoroughly equipped and care is taken that every detail of the patient's life there may be most helpful. If any child needs treatment for a minor illness he is taken by the mother to the clinic and there the mother may observe the treatment as it is administered. During the three summer months last year 217 babies were cared for. During the year 505 women, 578 babies and 567 children were given opportunity for rest at this Home.

*

Function of School Nurse.—The following table is of interest in showing the extent to which school nurses are employed in this country.

Division	Cities having systems of medical inspection	Cities employing school nurses	Number of nurses employed
North Atlantic	236	52	261
South Atlantic	23	5	11

South Central	35	4	5
North Central	109	28	114
Western	40	13	24
United States	443	102	415

Her work in general may be summarized as follows:

1. In the school:

(a) Making routine examinations of children to detect those cases which should be referred to the school physician.

(b) Assisting the physician in making physical examinations and recording results.

(c) Acting in emergency cases, such as caring for accidents, bandaging cuts, removing splinters, caring for cases of fainting, convulsions, and the like.

2. In the home:

(a) Explaining to parents the significance of the notices sent by the school physician concerning the condition of their children and aiding the parents in securing remedial action.

(b) Instructing and educating parents in the practices of applied hygiene.

3. In the clinic:

(a) Assisting the physicians in treatments and operations.

(b) Leading the children to view the proceedings of the clinic as diverting experiences rather than terrifying ordeals.

This work has had a most gratifying result in New York City where the number of exclusions from school have been reduced to something like one-thirtieth of their former proportions.—*The Modern Hospital*, June.

*

Carbon Bisulphide as Insecticide and Germicide.—According to an article appearing in the Wiener Klinische Wochenschrift, April 15, 1915:

"Carbon bisulphide has been used and has been found to meet all the requirements of a louse destroying agent. It is prepared by passing sulphur fumes over red hot coal. When fresh it has a disagreeable odor which it loses on distillation. To use it a large tin can is three-fourths filled with carbon bisulphide and 150 grams of paprika and 250 grams of flores sulphuris are added for every kilogram of carbon bisulphide. The clothes are hung up and the mixture is placed in tin trays and lighted. At the end of two hours, the lice as well as the eggs are destroyed. The residue remaining in the tin trays may be used as a deodorizing agent.

"The results obtained with carbon bisulphide as a remedy against lice have been so satisfactory that it was thought to be of value as a bactericide. Pieces of cloth soaked in boullion cultures of typhoid and cholera and later allowed to dry were exposed to the fumes and after two hours the bacteriological examination was negative. Pieces of cloth impregnated with bouillon cultures of the same organisms and placed in Petri dishes were exposed for the same length of time and the examination was again negative. Fresh virulent cultures of the organisms, in both open and closed reagent bottles, were likewise exposed and with a single exception (one tube of cholera bacilli) the subsequent examination was negative. Slant agar cultures were also killed in the same length of time. From these investigations it would appear that this agent acts not only against lice but also against pathogenic bacteria which may be present in clothes."—*New York Medical Journal*.

*

Starch Agar, a Useful Culture Medium.—Capt. E. B. Vedder has found the above medium preferable to the commonly used salt free veal agar for the growth of gonococci. A beef infusion is prepared as in making broth (meat extracts do not give good results). To this 1.5–1.75 per cent. of agar is added. No peptone or salt is used. The mixture is cooked, clarified and filtered as in preparing ordinary agar. It is then neutralized so that the final reaction will be from 0.2–0.5 per cent. acid to phenolphthalein. Ten grams of commercial corn starch are added for each liter of the medium. The corn starch is usually ground up with a little agar in a mortar to avoid lumps. After adding the corn starch the mixture is boiled for a few minutes, tubed and sterilized at not more than fifteen pounds pressure.

The medium is slightly clouded but is simple, inexpensive and has many other advantages. The growth of gonococcus organisms upon this medium is profuse after twenty-four hours and increases up to three or four days. These cultures are suitable for the culture of antigen and may be kept alive in the tube for over twenty

days. This medium may be melted and used for plating out cultures, and it is valuable for routine use with many other organisms.—*Jour. of Infectious Diseases*, May, 1915.

✱

Syphilis in the American Negro.—Through the study of statistics as well as by means of their own investigations Lynch and McInnes reached the following conclusions concerning the above topic:

"1. That in the Southern United States syphilis in the negro is proven to be a serious problem, affecting probably from 50 to 60 per cent. of the major class of this people, including day laborers, servants and trades people.

"2. That the negro women are apparently more subject to the disease than the negro men.

"3. That there is no apparent suggestive relationship between the positive Wassermann reaction and high blood pressure in the negro.

"4. That the ravages of syphilis in the individual were not severe in this study, that the diagnosis of the disease is difficult to make in many of this class of cases without the aid of a specific test, and in respect to the Wassermann reaction, barring a few doubtful reactions and three or four negative reactions in suspicious cases, in our opinion this test proved of good value, verifying suspicions of the infection.

"5. That it seems that while one or two miscarriages occur not more frequently in the syphilitic than in the non-syphilitic, the habit of miscarrying is much stronger in the former.

"6. That syphilitic women are not as productive as the non-syphilitic, and their children do not survive as well as those of the latter."—*Southern Medical Journal*, June, 1915.

✱

Organization and Activities of the International Health Commission.—The International Health Commission was created in June, 1913, by the Rockefeller Foundation and undertook as its immediate and principal task the relief and control of hookworm disease. Active measures are now in progress in the Southern States, Central America, the West Indies, British Guiana, and Egypt. The Sanitary Commission was organized by Mr. John D. Rockefeller in 1909 and was granted a million dollars to be used during the ensuing five years toward the eradication of hookworm disease in the United States. The necessary organization was carefully formed and work was undertaken in coöperation with the Board of Health in the states of Virginia, North Carolina, Georgia, South Carolina, Tennessee, Arkansas, Mississippi, Alabama, Louisiana, Kentucky and Texas. A state director was jointly appointed and the first work undertaken was to secure the coöperation of the physicians, the educational officers and the press. Thus the plan was put before the people in such a way that specimens for examinations could be readily obtained. First the state militia, then children of the various orphanages, then children in the public schools were examined. The disease was found to exist among from 10 to 90 per cent. of the people in various countries. The Dispensary plan was adopted and around this all activities centered. Before the close of 1914 there had been 1,273,850 persons microscopically examined, 694,516 persons were reported and treated, of this number 254,118 were treated and voluntarily reported by physicians, 440,398 were treated in the Dispensaries.

The next logical step was the extention and intensifying of the work in special communities. This has already been done to some extent. Other counties have agreed to coöperate in the work and the preliminary steps have been taken in the places previously mentioned. The Rockefeller Foundation supplies $400,000 for the work of the present year and it is expected that the amount will be gradually increased.—*Jour. American Med. Assoc.*, June 5, 1915.

✱

Hygiene in the Field.—The Medizinische Klinik, Berlin, states that "among the various measures enforced or contemplated to keep troops in health, it is the plan to repeat the antityphoid inoculation after a five months' interval. Every tuberculosis suspect is sent home, and a careful search is made through the civilian population for consumptives and suspects, and they are isolated in the public hospitals if possible. When this cannot be done they are left in their homes; the homes are placarded and all intercourse with soldiers is prohibited."—*Jour Amer. Med. Assoc.*, June.

A Periodic Health Examination.—The following results of the examinations of employees of commercial houses, banks, etc., by the Life Extention Institute bears emphasis of the advisability of a periodic health survey as a part of the personal hygiene of every individual.

	Per cent.
Normal	3.14
Imperfect—Advice needed regarding physical condition or living habits	96.86
Not aware of impairment	96.69
Referred to physicians for treatment	59.00
CLASSIFICATION OF IMPAIRMENTS	
Moderate to Serious	
Organic heart disease	5.38
Arterio-sclerosis—thickened arteries	13.10
High or low blood pressure	25.81
Urinary—Albumin, sugar, casts	35.63
Individuals showing combined disturbance of circulation and kidneys	12.77
Nervous	.73
Lungs—possible tuberculosis	.99
Venereal	.46
Minor to Moderate	
Functional Circulatory—Rapid, slow or intermittent pulse	11.37
Urinary (high and low specific gravity, crystals, indican, etc.)	21.62
Digestive organs	6.12
Constipation	14.70
Nose and throat	34.53
Ears	16.96
Decayed teeth and infected gums	22.22
Anemia	2.72
Skin	6.38
Errors in diet (pronounced)	13.70
Errors in personal hygiene	31.60
Physical Defects	
Faulty vision, uncorrected	16.03
Flat foot	3.19
Faulty posture	7.38
Rupture—no truss	1.79
Overweight—important	5.45
Underweight—important	19.16
Unclassified	7.38

The above table shows the percentages that the various impairments are of the whole number of employees examined. Many employees, of course, show several combined impairments. Average age 30.

Such a survey, asserts Doctor Fiske of the Life Extention Institution, may be made by any well-trained, up-to-date general practitioner who has been fully instructed as to the lines along which to carry the examination. And it should be even more than a mere physical examination, covering an inquiry into the heredity and living habits. Even though the expert diagnostician may be unfavorably impressed with what he considers the "superficiality" of the examination and some other physicians remain uninterested in any case which does not present serious pathological problems, the value of such an examination to the average individual in suggesting correctives regarding modes of living should be great indeed.—*Modern Hospital*, May, 1915.

⚜

A New Contrast Stain for B. Diphtheriæ.—Dr. G. McF. Mood has perfected a method by which methylene blue is converted by oxidation into methylene red within polar granules of this bacillus during the process of staining. The stain as perfected is as follows:

"Sat. Alcoholic Sol. Methylene-blue (Koch for Bact.) ..... 1 part.
Hydrogen peroxide ..... 9 parts."

The stain may be kept in well-stoppered bottle for several weeks. Upon its application there occurs a rise of small gas bubbles and as soon as this ceases (30 seconds to three minutes) the specimen is sufficiently stained, and may be dried either in the air or with the application of a small amount of heat. The bodies of the bacteria stain a pale pigeon-egg blue, while the polar granules are bright red. The results obtained by using this stain in over 600 specimens have been found to check exactly with the Loeffler and Neisser stains. The contrast colors are easily seen especially when artificial light is employed; and specimens will not overstain even if left for a half hour. The stain is not applicable to smears taken directly from the throat as the granules fail to stain under these conditions. After about eight hours' incubation at 37.5° C. upon Loeffler blood serum mixture the granules begin to appear and organisms which have been incubated for sixteen or eighteen hours give the optimum staining reaction.—*Southern Medical Journal*, June.

⚜

Recent Progress in Public Health Nursing.—A series of short articles in the *Public Health Nurse Quarterly*, April, 1915, present in brief form the work of four states in this line of public health activity. In New York the public health law was amended in 1913 to provide for a Division of Public Health Nursing in the State Department of Health. Nurses are required to pass civil service examinations, each nurse must

be not less than 25 years of age, and a registered nurse in New York state, and must have had at least two years' experience after graduation. As soon as a civil service examination was held the full quota of eight supervising nurses were appointed. The outline of the years work indicates the duties of the division which may be summarized as follows:

"To advise with local public health nurses in times of epidemic and to assist in the control of such epidemics.

"To advise and coöperate with school nurses, visiting nurse associations, social welfare centers, and in other fields in the relief and prevention of disease.

"To maintain constant supervision over the midwives of the state outside the cities of New York and Rochester, which are exempt.

"To extend the number of infant welfare stations and to advise and coöperate with the authorities in charge of already existing stations.

"To follow up patients discharged from county tuberculosis hospitals.

"To make tuberculosis surveys in counties where no hospital exists and to advise and coöperate with those administering tuberculosis dispensaries, and to urge the employment of a follow-up nurse by county tuberculosis hospitals."

In 1913 Ohio passed a law empowering medical superintendence of county or district tuberculosis hospitals to appoint public health nurses. In case a county had not provided such a hospital the county commissioners were allowed to appoint a public health nurse and pay her salary and necessary traveling expenses out of the poor fund. Of course, many public health nurses had been appointed by local boards of health previous to this act. So that there are now forty-two county, district and municipal nurses reporting their work each month to the State Board of Health.

In Massachusetts no division of public health nursing has as yet been planned by the State Department of Health and the question of its immediate inauguration depends almost entirely upon appropriations available. The value of this work is not doubted, however, and such a department will ultimately be established. At present fifteen cities and towns are on record as maintaining a public health visiting nurse in connection with their tuberculosis work.

Particular interest attaches itself to this work in Wisconsin because this is a rural state. Here the activities of the visiting nurse reach the remote farm house and the little country school.

As early as 1910 the Wisconsin Anti-Tuberculosis Association offered as one of the Red Cross Christmas seal prizes the one month services of a visiting nurse to each of the twelve cities between 8,000 and 25,000 population making the highest per capita sales. The work became popular at once. At present a graduate trained nurse is in the employ of the Association and visits communities which have manifested a desire to try out such work where she spends several weeks in putting the plan into actual operation.

In 1912 the state legislature passed a bill enabling counties to employ a visiting nurse who should care for patients both in the towns and in the country districts. Wisconsin has found that the people of the country districts need public health education quite as much as the inhabitants of the larger towns and the work already done there in establishing standards of right living, household sanitation, and disease prevention is worthy of commendation.

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Germicidal Effect of Lactic Acid in Milk.—The *Journal of Infectious Diseases*, May, 1915, published an article by P. G. Heinemann setting forth the results of several experiments. His conclusions are in part as follows:

"Some acid-tolerant cells of Bacillus coli may survive the presence of 0.6 per cent. lactic acid in milk.

"B. dysenteriæ, B. typhosus, B. diptheriæ, B. paratyphosus B, and Spirillum choleræ in in these experiments were destroyed by the presence of 0.45 per cent. lactic acid. It is possible that strains of these bacteria exist which are able to resist a greater amount of lactic acid.

"Acid-tolerant strains of B. coli, D. dysenteriæ, B. typhosus, and B. paratyphosus B may multiply in the presence of quantities of lactic acid which are destructive to the majority of cells. The smaller the initial amount of lactic acid, the more likely is the growth of acid-tolerant strains. Consequently, the slower milk sours, the greater is the danger of pathogenic bacteria surviving.

"The growth of the test bacteria is influenced to a marked degree by the amount of acid present. Up to a fairly definite amount of acid there is an increase in numbers, followed by a decrease, which becomes more pronounced as the amount of acid increases. The amount of acid may increase after the number of bacteria has commenced to decrease owing to the liberation of enzymes.

"Acids other than lactic acid are frequently present in buttermilk. Buttermilk, therefore, should be looked upon with suspicion, especially if heavily polluted, unless prepared from pasteurized milk. Still the chances of buttermilk becoming a carrier of infection are much smaller than of raw sweet milk.

"The presence of saprophytic bacteria in buttermilk may have some influence on pathogenic bacteria. Whether this influence is favorable or otherwise, is difficult to determine by present bacteriological methods."

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Isolation of the Typhoid Bacillus from the Living Body.—The *Presse Medicale*, March 25, 1915, contains an article by Carnot and Weill-Halle describing a unique but simple device.

"In a small U tube with narrowed inferior portion fine sand is introduced to a depth of two cm. The specimen of blood is mixed with ox bile, filtered and sterilized in the autoclave. The bile blood mixture is poured into one limb of the U tube and sterile bouillon into the other, to the same level. The bile prevents clotting of the blood and is, to a certain extent, a selective medium for the typhoid organism. The sand filter in the U tube prevents admixture of bile and bouillon, but allows the very motile typhoid bacilli to pass from the bile culture to the bouillon, with the result that in the case of a positive test, a typical bouillon culture is seen on the following day. Positive results are constantly obtained in the first few days of a typhoid infection, and usually persist throughout the first week."—*New York Medical Journal.*

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Sterilization of Water by Chlorine.—An apparatus described by J. J. Harper Nelson in the *British Medical Journal* of May 8, 1915 "consists of two bottles, one of about thirty ounces capacity, the other holding about two ounces. The larger is fitted with a double perforated stopper through which are passed two glass tubes, one short, the other reaching nearly to the bottom. Both are supplied with stop cocks. The long tube is connected with a short tube inserted through a stopper in the small bottle. Twenty ounces of water are placed in the large bottle and two drams of concentrated hydrochloric acid in the smaller along with fifteen grains of powdered potassium chlorate for the liberation of nascent chlorine and chloric dioxide. These gases are passed into the water in small amounts at a time with frequent shaking. This yields a solution of the two gases of such strength that when one ounce of it is added to five gallons of water, a concentration of chlorine gas of one in 500,000 is obtained. Repeated experiments with naturally and artificially contaminated water have proved that an exposure for half an hour to this concentration of chlorine suffices to sterilize it completely of all pathogenic organisms, particularly of the fecal group. The entire process consumes little over half an hour, and can be easily carried out effectively even by an inexperienced person. The amount of chlorine in the finished water does not impair its palatability or its potability. If the water is very turbid, it can first be cleared by sedimentation over night with alum; it is then treated with the chlorine solution. An outfit has been designed which weighs only twelve pounds and which can be easily carried on a man's back. This outfit contains sufficient material to sterilize 19,800 gallons of water without replenishing, or enough to give each of 200 men a gallon of drinking water a day for seven weeks. The process is inexpensive, rapid and effective."—*New York Medical Journal.*

*

Frequency of Tuberculosis Infection in Childhood.—Doctors Veder and Johnston have recently made a study of 1,321 hospital children in St. Louis and find that the percentage of positive tuberculin reaction reaches a maximum of 44 per cent. of the age period of 10 to 14 years, including cases with clinical tuberculosis. If children with clinical tuberculosis are excluded the percentage giving positive reaction at the 10 to 14 age period is only 36. These figures are much lower than the usual "90 per cent." figure for the incidents of infection with the tuber-

cle bacillus at the fourteenth year. This is the figure based upon the experiments of Hamburger for Vienna. It is found, however, that the extent of infection among children varies in different cities and countries and is dependent on such factors as living and social conditions, the amount of tuberculosis in the community, the exposure of the child to open tuberculosis, and in all probability varies in the same community. Thus, although, no definite conclusions can be drawn from any one city, it is felt that the statement that "90 per cent. or more" of individuals are infected by puberty is an extreme exaggeration of the actual conditions which exist.—*American Journal of Diseases of Children.*

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Pure Cultivation in Vivo of Vaccine Virus Free from Bacteria.—Dr. Hideyo Noguchi sets forth in the June issue of *The Journal of Experimental Medicine* the results of his experiments in vaccine cultivation. We quote from his summary as follows:

"Vaccine virus freed from all associated bacteria by means of suitable disinfecting agents can be propagated in a pure state in the testicles of rabbits and bulls. The virus cultivated in this manner is not only devoid of all bacteria, but appears capable of indefinite transfer from one animal to another. Sixty passages in rabbits of a pure strain have been made within one year.

"Several transfers from testicle to testicle are required to bring about accurate adaptation of the virus to the testicular parenchyma, so that continued propagation in this way can be certainly secured. During the first transfers from testicle to testicle the activity of the virus may be less than the original skin specimen from which the pure strain was derived; but as the transfers proceed the activity rises until, when the adaptation is complete, the activity of the testicular equals that of the skin strain.

"The multiplication of the virus within the testicle is maximum on the fourth or fifth day after inoculation; the quantity of virus remains about stationary until the eighth day, when diminution begins. At the expiration of five weeks no more virus could be detected in the testicle.

"The vaccinal processes in the skin, cornea, and testicle of rabbits are practically identical whether the virus employed for the inoculation has been the original skin strain or the pure testicular strain; and the skin lesions produced in the calf with the two strains are also identical.

"In conformity with the finding mentioned in the last paragraph it has been found that human beings react to the pure testicular strain of vaccine virus in an entirely typical manner. In the case both of original vaccination and revaccination the vaccinal effects cannot be distinguished from those arising from uncomplicated skin virus.

"Pure strains of testicular virus are readily produced, and once secured they may be propagated in a pure state by the method described in rabbits or bulls without difficulty and with economy. The pure strains thus obtained should supply an ideal form of virus for employment in the vaccination of human beings."

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Artificial Immunity in Cattle.—The State Live Stock Sanitary Board of Pennsylvania has recently issued a bulletin, circular No. 32, giving the results of a large amount of experimentation in producing artificial immunity in cattle against tuberculosis. The following are the conclusions:

"Intravenous injections of tubercle bacilli from human sources, non-virulent for cattle, are capable of conferring an immunity in cattle against tuberculosis sufficient to withstand natural infection by association with tuberculous cows. The length of the immunity conferred has not been determined definitely, but it is believed to gradually diminish after two and one-half years. The vaccinated animal during the period of vaccination and for some weeks afterwards is more liable to contract tuberculosis than a normal animal. The natural resistance of the animal is apparently lowered during the time of vaccination. The interval between the vaccinations should be of sufficient length to allow any reaction following the previous vaccination to entirely subside. The degree of immunity obtained in the animal depends to a certain extent upon the number of vaccinations and the amount of vaccine administered. The vaccine should be prepared so it contains no clumps of bacilli and should be administered fresh. A number of the vaccinated animals may give a typical tuberculin reaction following the vaccinations for a period of twenty months. These animals may or may not show lesions or tuberculosis at autopsy. Vaccine administered to animals already infected with tuberculosis is

capable of retarding or holding in check the progress of the disease. The milk from immunized cows when fed over a long period of time appears to increase the resistance of calves and pigs. Vaccination of calves against tuberculosis is of assistance in the eradication of tuberculosis from a herd if done under the proper conditions. Until further knowledge is obtained in regard to the destruction or outcome of the living tubercle bacilli constituting the vaccine, no practical method for the immunization of milk-producing animals under ordinary conditions can be advocated."

Part two of the report is devoted to a theoretical discussion of the principles involved.

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Ophthalmia Classes in New York Schools.—The city of New York has been particularly successful in the work done by special classes for the segregation of public school children suffering from infectious eye diseases. This work was begun in October, 1912. A discarded public school building was remodelled and furnished in the most sanitary manner. Two classes, a junior and senior, of mixed grades were established. And here children who would formerly have been excluded from school are transferred without delay. The children still continue their studies although the school hours are shortened and much more attention is given to instructing the child in personal, family and social hygiene than in continuing his grade lessons. The children are required to attend school and it is thus made certain that each child receives the required treatment. The effects upon both the children and their families have been most gratifying.—*The Modern Hospital*, June.

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Malaria.—The *Tropical Disease Bulletin*, for May 15, 1915, is largely devoted to a review of the recent literature dealing with the above disease. Some of the facts gathered from the various papers follow.

The importance of the comparative ability of the different species of mosquito to transmit malaria is shown by the fact that between 100,000 and 250,000 dollars was saved in the sanitation of the Panama canal zone by the knowledge that anopheles malefactor was unable to transmit the disease.

Medical studies show that intravenous uses of quinine in doses of fifteen grains in a dilution of 250 to 300 cc. saline may be used by a competent physician with good results. The discomfort of the patient is quickly and effectively reduced and the benefit conferred is permanent. Alcohol is strongly contra-indicated.

Important factors in exterminating mosquitoes by drainage are outlined. A stream should have steep banks directly above and below the flow line, the course should be straight and free from obstructions. It is often cheaper to line ditches with concrete than to be repeatedly regrading and cleaning them. The only successful method of exterminating mosquitoes is by the destruction of their breeding place; birds or other insect or larva-feeding animals may reduce the number but will not eradicate the pests. Semi-refined and not crude oil should be used to spread over the surface of the water in this sort of work although drainage should always be preferred to oil treatment where possible. Just sufficient oil should be used to form a complete film.

The breeding place of *anopheles* in impounded waters are classified according to the relative importance as follows: (1) groups of pine needles when not closely compacted. (2) Débris consisting of bark, leaves and twigs. (3) Long grass lying on the water surface. (4) Dead leaves floating on the surface. (5) Logs, branches and stumps.

The loss of rural industries through malaria has been studied by the United States Bureau of Entomology. A plantation in the delta region of the Mississippi was selected for study because of the absence of such conflicting features as enteric fever and pellagra. Seventy-four families with a total of 299 individuals were included in the study. During the crop season of 1914 a total loss of 1,066 days of adult time occurred. A smaller investigation in Arkansas showed that the patients lost on an average 5.50 days for each attack.

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Open Window Classes—The Psychological Clinic, April 15, contains the result of an experiment conducted by D. C. Bliss at Montclair, New Jersey, to ascertain the value of open window classes for students of the second, third and fifth grades. The student population for the experiment and the check classes were carefully selected, and the degree of nutrition, measured in terms of weight gained or lost, the general

health and mental conditions were carefully watched. In each of these three respects the statistics dealing with the four separate open window classes in three different school buildings for two successive years show that these students derived no particular advantage. In fact children under normal conditions showed greater gains in all three respects. The question is the more important because it is the opposite of the result expected. It is interesting to note, however, that almost without exception the parents of the pupils in the open window classes were convinced that their children were greatly benefited, being less nervous and eating and sleeping better than ever before.

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Is Europe in Danger of a General Pestilence?—The possibility of widespread epidemics in Europe has recently been discussed by many medical magazines; the *Lancet* states that the danger will be much greater in the coming months than it has yet been. The armies are in poorer physical, material and mental condition, while the civil population will be without the assistance of physicians and public health administrators since these are now engaged in the war. Under the waters along the inundated area of the Yser lie 100,000 corpses. Flies are breeding in an unprecedented rate, and the trenches are alive with insects.

The *British Medical Journal* states that there is no cholera as yet in Flanders or northern France, but it has been present in Galicia and Hungary for some time. According to the *Deutsche Medizinische Wochenschrift* sanitary science is practically unknown to the Russians. Septic infections are frequent even when the wounds are slight. There are many carriers of typhoid fever; and smallpox is also raging. The camp diseases, typhoid, malaria, cholera, and dysentery have been with the Czar's armies since the beginning of the war. The efficiency of the German experts is shown by the way in which infections introduced by the enemy have been checked. Yet it is indeed an open question as to whether the sanitary science of Europe will be able to withstand the tremendous strains to be placed upon it in safeguarding the civil and military peoples in Europe during the coming months.—*Current Opinion*, June.

Industrial Hygiene and Sanitation.

Work of a Safety Commission.—Does "safety work" pay? The affirmative answer of C. H. Blakemore, Chairman of the Norfolk and Western Railway Company is enthusiastic.

Data just compiled show that the monthly number of injuries to employees of the company has decreased from 414 in May, 1913, to 172 in December, 1914—a reduction of 57 per cent. while the payroll during the same time has declined but 17 per cent.

The following from *Safety* for April gives further interesting comparisons:

During 1913 a yard employee was injured for each $2,800 worth of yardmen working; during 1914 one yard employee was injured for each $4,600, an improvement of 64 per cent.

"During 1913 a division employee was injured for each $6,600 worth of division employees working; during 1914 one division employee was injured for each $8,000 of payroll, an improvement of 21 per cent.

"During 1913 a line shop motive power employee was injured for each $2,600 of payroll; during 1914 one was injured for each $3,600, an improvement of thirty-eight per cent.

"When the Safety department was inaugurated by the Norfolk & Western System one employee was being injured for, approximately, each $3,600 worth of payroll. The last month covered by these figures—December, 1914—shows one employee injured for each $7,000 worth of payroll. This is a reduction of which the Safety Commission has cause to be proud."

Sanitation among Garment Workers.—The fourth annual bulletin of the Joint Board of Sanitary Control in Cloak, Suit and Skirt and the Dress and Waist Industries, is an extremely interesting and illuminating pamphlet to one interested in the health of workers or influenced by the environment of shops where they are employed.

The accompanying cut indicates that sanitary conditions in this line have undergone a very considerable improvement during this period.

The following sanitary standards of the Joint Board in addition to the state and municipal legal requirements which are set forth in the bulletin, indicate an extremely intelligent and far-sighted as well as a humanitarian standard in this respect:

FOUR YEARS' PROGRESS
IN THE
CLOAK AND SUIT INDUSTRY
1911—1914
REDUCTION OF FIRE DANGERS
PERCENT OF TOTAL NO.
NUMBER OF SHOPS
Shops with no fire-escapes 1911 3.6 1914 .1
Shops with no drop ladder to fire-escapes 1911 15.5 1914 .05
Shops with fire-escapes ending in fire traps 1912 8.0 1914 1.0
Shops with exit to fire-escape in shop obstructed 1911 9.2 1914 1.8
Shops with doors opening in 1911 79.4 1914 27.3
Shops with no fire buckets 1911 21.5 1914 2.4
IMPROVEMENTS IN SANITATION
Shops having no protection against glare from lights 1911 73.2 1914 18.5
Shops using foot power 1911 19.3 1914 0.6
Shops having no dressing facilities 1911 58.5 1914 1.7
Shops with insufficient number of water closets 1911 4.2 1914 1.2
Shops with improper separation of water closets 1911 8.1 1914 0.5
Shops with dark water closets 1911 10.3 1914 1.4
Shops with dirty water closets 1912 24.0 1914 3.7
Shops with dirty water closet floors 1911 10.1 1914 3.4
Shops with dirty water closet walls 1911 9.8 1914 0.6
Shops with water closet flush out of order 1911 4.9 1914 1.4
Shops with dirty ceilings 1911 2.3 1914 0.0
Shops with dirty walls 1911 8.1 1914 0.4
Shops with dirty windows 1911 12.7 1914 0.6
Shops with dirty floors 1912 30.0 1914 4.2
Shops with no receptacle for rubbish 1911 16.3 1914 5.1

(1) No cellar or underground story, the ceiling of which is less than seven feet above the adjoining ground, may be used as a workshop.

(2) Workshops located in rear houses, attics or converted tenement houses must have a special permit from this Board.

(3) All machines and other appliances which are in use, must be placed so as to have sufficient natural or artificial light at all times, the Board to determine in individual cases in regard to all complaints concerning insufficient light.

(4) All lights must be so placed as not to glare in the eyes of the workers; they must be at a distance from the operatives and well shaded.

(5) All shops should be properly aired during noon pauses by opening windows and doors. During the hot season in the summer there should be placed in the shop a sufficient number of electric fans for the purpose of ventilation.

(6) No irons heated directly with coal or gas tubes may be allowed in the shops. Wherever gas irons are used they must be supplied with air pressure; they must be properly adjusted and the pipes made gas tight.

(7) Each shop should have a special caretaker for the cleaning of floors and water-closet apartments.

It is recommended that proper and sufficient lunch accommodations should be provided apart from the work benches and machines, the owner to be responsible for the cleanliness and sanitary condition of the lunch counter.

*

Industrial Accident Statistics.—Bulletin 157 of the United States Bureau of Labor Statistics contains a very complete summary of statistics of industrial accidents. The establishment of boards and commissions for the purpose of administering workmen's compensation laws furnishes a more adequate comprehensive source from which such statistics can be obtained than previously existed.

Statistics from a number of foreign countries as well as from American States are included.

One of the most interesting features of this Bulletin is the inclusion of the classification of industrial accidents as adopted by a number of states and foreign governments.

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The Employment Certificate as an Instrument for the Enforcement of Child Labor Laws.—The Children's Bureau of the Department of Labor has just issued a study of the administration of the employment certificate system in Connecticut. This is the first of a series of reports to be issued on the enforcement of child labor laws. It is planned to show how child labor laws, instead of merely serving as a salve to the conscience of public and legislature, may be made of practical benefit to working children.

The purpose in these studies is to throw light upon the actual working procedure of various types of child labor laws and to show how various methods of enforcement work out in actual practice.

The employment certificate is the key to the enforcement of all child labor laws, for it prevents children from working until they are actually 14, and also furnishes a ready method of determining exactly what persons at work in an establishment are subject to other laws regulating hours of labor, night work, operation of dangerous machinery and the like.

In Connecticut no child can get an employment certificate and stay out of school unless he has a job, for not merely does he have to produce a promise of a position, but his employer must report when he begins work. The certificate issued is good only for the employer to whom it reads, and is not given to the child, but is sent by mail to the employer. There is no delay in beginning work, however, since either the child or his parent is handed a duplicate labeled "For parent: not good for employer longer than one week." This makes it possible for the child to start work even before the employer has received the certificate sent through the mails. A third copy is filed with the State Board of Education.

If a child quits work, his employer must notify the State Board, and before he can go to work again he must secure a fresh certificate reading to his new employer.

The striking feature of the Connecticut system of issuing employment certificates is that the State Board of Education controls its enforcement and dovetails the working of the compulsory education law with the child labor law. Practically every step is under the direct supervision of the State Board of Education. Agents of the State Board travel from town to town, issuing working papers, inspecting shops, and visiting in their homes children who have left their jobs.

The Children's Bureau finds the Connecticut law weak in the following particulars: First, the law does not require ability to read and write in English, literacy in any language being sufficient;

second, school records showing too low a grade are accepted in lieu of an educational examination; third, physical examination by a physician is required only in those cases where the agent believes physical unfitness exists; fourth, the methods of preventing school children from working illegally out of school hours appear inadequate; fifth, lack of complete coöperation with parochial schools may enable some children to escape the reporting system; sixth, the school census is not yet fully worked out for utilization in the enforcement of the child labor law; and seventh, there is at best great delay in returning unemployed children to school and little or no provision in the schools for the needs of the children temporarily returned.

It would seem from this review that while the education of the child is given a very large emphasis, not enough attention is paid to the question of health. That this is so is only an instance of the general attitude which is displayed toward the question of health conservation. In other words, public health and public education are both advancing but education is still a good many jumps ahead.

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Industrial Accidents in Porto Rico.—The third annual report of the Porto Rico Bureau of labor contains the following statement regarding the causes of industrial accidents:

"The causes of accidents are as various as the acts of man and the implements used by him. Not only so, but there are usually several causes which have contributed, more or less directly, to each single accident. The fault may be that of the injured man or of other persons working with him; it may be in the implement which he is using or in the material upon which he is working; it may be due to an overwhelming force beyond all control; it may be that the fault is actually unknown. But regardless of *how* the accident happened, the injured man or his dependents suffer and those upon whom the support of the injured man, or his dependents, falls are frequently overburdened.

"There is one cause of accidents, recognized by all men who work with machinery but usually not appreciated by the public, and that is inertia. For example, a man worked on a certain machine; he knew all about that machine, he had cleaned every bolt and screw in it; he knew the dangers connected with the machine—and yet he was injured. Perhaps his fingers were caught under the press, perhaps his sleeve was caught in the gearing. He, himself, might say he was careless. The court would certainly say he was negligent. And yet there are always a certain proportion of such accidents. Education of laborers may prevent some of them; the use of guards and other safety devices will certainly reduce their number. The fact is, however, that neither carelessness nor negligence properly explains the majority of these accidents. They are due to inertia, to the fact that the workman has done the same thing over and over until his nerves fail to work quickly enough, his eyesight is a little slow, his muscles are overtired, or he is sick, or some other physical cause, *beyond his immediate control*, prevents his fingers from moving with their usual quickness and his arm from being withdrawn from the gearing in the usual manner. It is due to carelessness and negligence but not such carelessness or negligence as should prevent the injured workman from receiving help. It is one of the almost unavoidable costs of production, a cost in human efficiency or life, and should be borne by the industry which is responsible for it."

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"High Cost of Child Labor."—A recent "Exhibit Handbook," issued by the National Child Labor Committee is entitled "High Cost of Child Labor." This pamphlet contains a considerable array of statistics and photographs calculated to show that in the end the cost of child labor, not only to the child but to society and even to industry itself, is so high that its employment is false economy in the long run.

The cost to industry is pointed out as due to the following results from the use of child labor;

1. Waste of products;
2. Less profits in long run;
3. Lower efficiency of child labor adults.

The relation of child labor to the public health problem is made clear in the following "Vicious Circle" shown in this pamphlet. "You all know how the circle goes: child labor, illiteracy, industrial inefficiency, low wage, long hours, low standards of living, bad housing, poor food, unemployment, intemperance, disease and poverty, *child labor illiteracy*."

At least five or six of the links in this endless chain involve questions of health and its conservation.

CURRENT PUBLIC HEALTH LITERATURE.

AMERICAN.

Boston Medical and Surgical Journal, Boston.

CLXXII, 13. April 1, 1915.

The Menace of Syphilis to the Clean-Living Public. J. H. Blaisdell.

CLXXII, 15. April 15, 1915.

Communicable Diseases and Their Relation to the Handling of Food. E. A. Otis, A. J. McLaughlin, H. Linenthal, C. Floyd A. Post, T. K. Cory, H. Abrahams.

CLXXII, 20. May 20, 1915.

The Relation of Alcohol to Accidents. W. J. Brickley.
Obesity and Malnutrition. W. E. Preble.

CLXXII 21. May 27, 1915.

The Responsibility of the General Practitioner for the Care and Supervision of the Discharged Sanatorium Patient. J. B. Hawes.

CLXXII, 23. June 10, 1915.

The Relation of Bacteria to the Etiology of Summer Diarrhœa in Young Children. A. I. Kendall.

CLXXII, 24. June 17, 1915.

Syphilis and Lung Disease. A. F. Downing. Tuberculosis Infection as a Disease Entity. G. T. Palmer.

Bulletin of Johns Hopkins Hospital.

XXVI, 291. May, 1915.

Influence of Dieting on the Course of Cancer. P. Rous.

California State Journal of Medicine, San Francisco.

XIII, 5. May, 1915.

Successful Methods of Attack on Malaria in California. W. B. Herms.

Engineering News, New York.

LXXIII, 13. April 1, 1915.

Water Filtration Plant, Quincy, Ill. W. R. Gelston.

LXXIII, 17. April 29, 1915.

Municipal Garbage Reduction Plant, Schenectady, N. Y.

LXXIII, 18. May 6, 1915.

Water Coagulation, Sedimentation, and Aeration at Norristown, Pa. S. C. Corson.
Operation of the Cincinnati Water Filtration Plant for 1914. J. W. Ellms.
Use of Liquid Chlorine at Buffalo Water-Works Intake. H. F. Wagner.
Stripping Water-Works Reservoirs. A. Hazen, G. C. Whipple.

LXXIII, 19. May 13, 1915.

Sewage Treatment Plant at Calvert, Texas. T. L. Fountain.

LXXIII, 20. May 20, 1915.

Water Purification Results at Cincinnati in 1914.
Water Supply and Typhoid Fever in Cumberland, Md. A. J. Fowler, M. J. Colton.

LXXIII, 21. May 27, 1915.

Factory With Down Ventilation through Columns.
Sewage Treatment Plant for a Small Sanatorium.
Garbage Reduction at Columbus, Ohio, 1913-14.

LXXIII, 22. June 3, 1915.

Municipal Fertilizer Plant at Los Angeles, Cal. B. A. Heinly.

LXXIII, 23. June 10, 1915.

Sewage Works of Norristown. C. Potts.
Meeting Water Supply Shortage at Henrietta. T. L. Fountain.

LXXIII, 24. June 17, 1915.

Automatic Liquid-Chlorine Disinfecting Plant. J. A. Newlands.
Refuse Incinerator, Florence, S. C. M. Moffitt.
Chicago's Sewage and Water Supply Problem.

Engineering Record, New York.

LXXI, 19. May 8, 1915.

Columbus Water Works Makes Its Own Alum.
A Revolutionary Step in Water Purification Practice. C. P. Hoover.

LXXI, 20. May 15, 1915.

Although the Water Is Chlorinated B. Coli Increase in Number. H. E. Jordan.

LXXI, 21. May 29, 1915.

Imhoff Tanks and Sprinklers for Sewage of Brighton District, New York.

LXXI, 22. June 5, 1915.

Recommend Filtering Chicago Water and Progressive Disposal of Sewage. Super, Watson, Marsten.

LXXI, 24. June 12, 1915.

Remodeling Septic Tanks into Imhoff Tanks Eliminates Odors from Land Irrigation.

Journal of Experimental Medicine, New York.

XXI, 4. April 1 1915.

A Comparison of Adult and Infant Types of Gonococci. L. Pearce.
The Influence of Milk Feeding on Mortality and Growth, and on the Character of the Intestinal Flora. L. F. Rettger.

XXI, 5. May 1, 1915.

The Rapid Production of Anti-dysenteric Serum. Flexner, Simon, Amoss.

XXI, 6. June 1, 1915.

Antibody Formation Against Treponema pallidum—Agglutination. Zinsser, Hans, Hopkins, Gardner.

Journal of the American Medical Association, Chicago.

LXIV, 14. April 3, 1915.

A Milk-Borne Epidemic of Tonsilitis in Tuberculous Patients. H. A. Bray.
Study of a Recent Typhoid Epidemic with Especial Reference to the Use of Anti-typhoid Vaccines. W. P. Elmer.

LXIV, 15. April 10, 1915.

Schick Reaction with a Report of Eight Hundred Tests. H. N. Bundesen.
Prevention of Beri-Beri Among Philippine Scouts by Means of Modifications in the Diet. W. P. Chamberlain.
Cöoperation in Public Health Administration. G. F. Ruediger.

LXIV, 16. April 17, 1915.

The Significance of B. Coli in Pasteurized Milk. L. P. Shippen.

LXIV, 17. April 24, 1915.

Dangers and Inconsistencies in Some Notable Short-Time Treatments for Drug Addictions. C. C. Wholey.

LXIV, 18. May 1, 1915.

The Wassermann Reaction as a Clinical Test, with Special Reference to Its Bearing on Matrimony. W. J. Heimann.

LXIV, 21. May 22, 1915.

Analysis and Costs of Ready-to-Serve Foods. G. Lusk.

LXIV, 22. May 29, 1915.

History and Epidemiology of Typhus Fever. V. C. Vaughan.

LXIV, 24. June 12, 1915.

The Beginning of Syphilis. W. A. Pusey.

Journal of Infectious Diseases, Chicago.

XXI, 2. March, 1915.

The Mechanism of Phagocytosis. J. L. Kite and W. B. Wherry.
The Technic of the Wassermann Reaction with Reference to Thomas and Ivy's Method of Complement Dosage and to the Management of Natural Anti-sheep Amboceptor. R. Cttenberg, B. Frazier.
Experimental Study in the Distribution and Habitat of the Tetanus Bacillus. W. Noble.
Relation of the Number of Streptococcus Lacticus to the Amount of Acid Formed in Milk and Cream. P. G. Heinemann.
Complement Fixation in the Diagnosis of Gonococcal Infections. E. E. Irons, H. K. Nicoll.

Bacteriemia Due to Bacillus Diphtheriæ. H. W. Wade.
The Production and Detection of Specific Ferments for the Typhoid-coli Group. G. H. Smith.
The Diagnostic Value of Intracutaneous Injection of Diphtheria Toxin. G. H. Weaver, L. Maher.

XVI, 3. May, 1915.

Simultaneous Infection in a Child with Tubercle Bacilli of the Human and of the Bovine Type. A de Besche.
Starch Agar as a Useful Culture Medium. E. B. Vedder.
Complement Fixation in Whooping Cough. W. Windolt.
An Epidemic Simulating Typhoid Caused by a Paragaertner Organism. G. H. Robinson.
The Germicidal Effect of Lactic Acid in Milk. P. G. Heinemann.

Illinois Medical Journal, Chicago.

XXVII, 5. May, 1915.

Digestive Disturbances of Infancy of Bacterial Origin. R. A. Black.

XXVII, 6. June, 1915.

The Early Diagnosis of Pulmonary Tuberculosis. H. Babcock.
Tuberculin in Diagnosis and Treatment. M. Maxey.

Interstate Medical Journal.

XXII, 5. 1915.

Non Industrial Injuries to the Eye. H. C. Greene.
The Problem in Suspected Pulmonary Tuberculosis, and Early Cases with Slight Lesions and Negative Sputum. C. B. Slade.

Public Health, Lansing, Mich.

May, 1915.

Sanitation at Summer Resorts. W. F. Waugh.
Summer Resort Sanitation. W. H. Smith.

U. S. Public Health Reports, Washington.

XXX, 15. April 9, 1915.

Interstate Migration of Tuberculous Persons. E. A. Sweet.
Plague Prevention Work. Hurley.

XXX, 16. April 16, 1915.

Bubonic Plague—A Menace to American Seaports. W. C. Rucker.

XXX, 18. April 30, 1915.

Typhus Fever—Its Etiology and the Methods of Its Prevention. J. F. Anderson.
Anopheline Surveys—Methods of Conduct and Relation to Antimalaria Work. R. H. von Exdorf.

XXX, 20. May 14, 1915.

Compensation for Occupational Diseases.

XXX, 21. May 21, 1915.

Public Health Administration in Illinois. S. B. Grubbs.

XXX, 22. May 28, 1915.

Malaria in the U. S.—Its Prevalence and Geographic Distribution. R. H. von Exdorf.

XXX, 23. June 4, 1915.

The Migratory Habits of Rats. R. H. Creel.
Trachoma—Its Presence in the Schools of Tuscaloosa, Ala. R. A. Herring.
Rocky Mountain Spotted Fever—Found in Southeastern Montana. L. D. Fricks.

XXX, 24. June 11, 1914.

Virulent Smallpox, New Bedford, Mass.
The Practicing Physician—His Relation to Public Health Administration. W. C. Rucker.

FOREIGN.

Annales De L'Institut Pasteur, Paris.

XXIX, 3. March, 1915.

Butyric Acid and Sclerosis. G. E. Coleman.

XXIX, 4.

Serum-Diagnosis for Tuberculosis. E. Debains and F. Jupille.
Researches on the Fixation of Toxines by the Leucocytes Kobzarenko.

Archiv für Hygiene, Berlin.

LXXXIV, 243. 1915.

The Vitiation of Air by Carbon Dioxide with Particular Reference to a Few Well-Known Sources of the Same. L. G. Meyer.

Archiv Italiennes De Biologie, Pisa.

LXII, 3. 1915.

The Motility of Bacteria Exposed to the Rays of Ultra Violet Light. C. Vervesi.

Berliner Klinische Wochenschrift, Berlin.

LII, 15. April 12, 1915.

Scarlet Fever and Diphtheria in Their Relation to the Public. Benda.

LII, 17. April 26, 1915.

Character and Transmission of Certain Infectious Diseases and Their Influence Upon the Outcome of the Wound. Zeissl.

British Journal of Tuberculosis, London.

IX, 2. April 1915.

The Anti-Tuberculosis Campaign in Bombay India. J. A. Turner.
Tuberculosis and the War. R. M. Leslie.

British Medical Journal, London.

2832. April 10, 1915.

Prophylactic Inoculation Against Tuberculosis. W. M. Crofton.

2833. April 17, 1915.

Two Cases of Lupus in Children. H. W. Barber.
The Effects of Military Training on Lead Workers. F. Shufflebotham.
Typhus Fever. E. C. Hoit.

2835. May 1, 1915.

Further Remarks in the Mixed Typhoid+Paratyphoid A+Paratyphoid B Vaccine. Aldo Castellani.

2836. May 8, 1915.

Sterilization of Water by Chlorine. J. J. H. Nelson.
Insects and War: The Mosquito. A. E. Shipley.
On the Curve of the Epidemic. J. Brownlee.

2838. May 22, 1915.

The Sterilization of the Skin by Tincture of Iodine. J. L. Stretton.
Typhus Fever in Palestine, 1913-1914. C. H. Corbett.

2839. May 29, 1915.

Traumatism and Tuberculosis. T. Oliver.
A Method for the Bacteriological Examination fo the Naso-Pharynx in Epidemic Cerebro-Spinal Meningitis. W. H. Fearis.

2841. June 12, 1915.

The Mortality of Appendicitis. G. G. Turner.

Bulletin De L'Institut Pasteur, Paris.

XIII, 3. February 15, 1915.
XIII, 4. February 28, 1915.

Immunity in Tuberculosis and Antituberculosis.
Vaccination of the Bovidæ. H. Vallée.

Canadian Medical Association, Toronto.

V, 4. April 1915.

Vaccines in the Treatment of Bacterial Diseases of the Lungs Complicating Pulmonary Tuberculosis and Their Preparation. F. W. Wittich.

Child, London.

V, 8. May, 1915.

Open Air Schools. R. C. Menton.

The Hygiene of Reading. J. C. Bell.

V, 9. June, 1915.

Causes of Malnutrition in School Children. W. A. Daley.

Deutsche Medizinische Wochenschrift.

XLI, 19. May 6, 1915.

Bread and Its Properties. M. Rubner.

Deutsche Vierteljahrschrift für Öffentliche Gesundheitspflege.

LXXIV, 1. 1915.

The Hygiene of the Cabinet-Makers Trade. S. Merkel.

Gazzetta Degli Ospedali, Milan.

XXXVI, 27. April 4, 1915.

Contribution to Landau's Reaction for Syphilis. G. Cappello.

Glasgow Medical Journal, Glasgow.

LXXXIII, 1. April, 1915.

Chorea. I. Mackenzie.

Notes on the Agglutinating Power of the Serum of a Person Inoculated Against Enteric Fever. A. Patric.

Hygienische Rundschau, Berlin.

XXV, 8. April 15, 1915.

Sterilization of Water in the Field by Calcium. Hypochlorite.

Journal of Experimental Medicine, London.

XXI, 6. June 1, 1915.

A Study of the Pathogenic Properties of B. Proteus. W. P. Larson and E. T. Bell.

Journal of the Royal Sanitary Institute.

XXXVI, 3. April, 1915.

Rat Plague; and the Powers of a Medical Officer of Health to Cope Therewith. W. M. Willoughby.

XXXVI, 4. May, 1915.

Some Metazoon Parasites Met with in Food Inspection, and Their Relation to Public Health. A. W. N. Pillers.

The Working of the Tuberculosis Regulations of the Board of Agriculture and of the Local Government Board. J. D. Whitehead.

Notes on Eradication of Tuberculosis from Dairy Herds. G. Percy.

The Evolution of Hygiene and Public Health in Australia. W. P. Norris.

Maternity and Child Welfare Schemes. E. W. Hope.

Journal of State Medicine, London.

XXIII, 3. March, 1915.

Government and Civil and Military Sanitation in the Tropics. R. Ross.

Housing Conditions in Their Relation to the Spread of Tuberculosis. A. M. Williamson.

XXIII, 4. April, 1915.

Public Health and Tuberculosis. A. James.

XXIII, 5. May, 1915.

Prevention of Milk Adulteration. T. Bishop.

Lancet, London.

CLXXXVII, 4779. April 3, 1915.

Cerebro-Spinal Meningitis. With Notes on Two Epidemics. E. Norman.

CLXXXVIII, 4875. May 15, 1915.

Chemistry of Rice-Polishing. H. Fraser.

Medical Officer, London.

XIII, 14. April 3, 1915.

Epidemic Cerebro-Spinal Meningitis. R. Douglas.

XIII, 15. April 10, 1915.

Training of Meat Inspectors on Uniform Lines. O. C. Bradley.

XIII, 18. May 1, 1915.

Maternity and Child Welfare Work. A. White.

XIII, 22. May 29, 1915.

The Notification and Control of Venereal Diseases. L. Chargin.

Public Health, London.

XXVIII, 8. May, 1915.

Lead Poisoning in Relation to Public Water Supplies. J. A. Marsden.

A Note on the Anti-Serum Treatment of the Cerebro-Spinal Meningitis. C. W. Hutt.

Some Notes on a Series of Cases of Diphtheria. W. G. Willoughby.

Revue D'Hygiène, Paris.

XXXVII, 2. February 20, 1915.

The Vaccines. H. Roger.

The Rôle Played by Expired Air in the Transmission of Epidemics. M. A. Trillat.

XXXVII, 4. April 20, 1915.

Experimental Vaccination Against Cholera with Vaccine Sterilized with Ether. H. Vincent.

The Protection of Infants During the First Five Months of War in the Intrenched Camp of Paris. A. Pinard.

Société Médicale des Hôspitaux, Paris.

XXXI, 14–15. May 6, 1915.

Serumtherapy in Typhoid Fever with Rodet's Serum. G. Etienne.

XXXI, 16–17. May 13, 1915.

The Necessity of Bacteriological Researches for the Differential Diagnosis of Typhoid and Paratyphoid Fever. A. Pissavy and P. Abrami.

A Clinical and Bacteriological Study of a Small Epidemic of infectious Icterus. P. Carnot and B. Weill-Hallé.

Zeitschrift für Fleisch und Milchhygiene, Berlin.

XXV, 11. March 1, 1915.

Bitter Milk by B. Subtilis Rievel.

The World War and Germany's Meat Supply During the War. Bongert.

XXV, 13. April 1, 1915.

Some Unusual Pathological Changes in Slaughtering Animals. Warnecke.

The Rubner Method for Differentiating Pasteurized from Unpasteurized Milk. Reiss and Dresselhorst.

XXV, 15. May 1, 1915.

The Storage of the Meat Supply. Pützler.

Comparative Studies on the Value of New Mastitis Diagnoses for Milk Control. Ehrensberger.

Zeitschrift für Hygiene und Infektionskrankheiten.

LXXIX, 3. March, 1915.

The Purification of River Water by Ozone. F. Schütz.

The Operation of a Safe Method for the Treatment of Drinking Water with Hypochlorite. J. D. Ruys.

The Rhein Method for Sterilizing Drinking Water in the Field. F. Gothe.

LXL, 1. April, 1915.

Further Epidemiological Investigation on Diphtheria. R. Klinger, E. Schock.

Investigation on Drinking Water Filters. The Theory of the Slow Sand Filter. K. Kesskalt.

Personal Notes.

Dr. S. L. Jepson of Wheeling, who has served as secretary of the West Virginia Board of Health during the past two years, was on June 1, 1915 appointed State Commissioner of Health for the term of four years under a new law which constitutes a Public Health Council to consist of a state commissioner of health and six additional members.

This Council retains the function of examining board held by the former Board of Health. The first examination of applicants for licensure will be held in Charleston on July 7. The first meeting of the new Council will be held in Charleston on June 11 for organization, and such business as may come before it.

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Mr. Gustave R. Tuska, M. Am. Soc. C. E., M. Am. Soc. M. E., Consulting Engineer, New York City, has been appointed Lecturer in Municipal Waste Disposal at Columbia University in the city of New York, and will deliver a course of lectures on this subject at the University during the coming year.

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A dinner was recently given Dr. Theobald Smith of the Harvard Medical School on a send-off to Doctor Smith on the event of his removal to New York where he will take charge of the department of animal pathology of the Rockefeller Institute.

Several speakers lauded his medical research work, especially his discovery of the cause of Texas fever in cattle, and the guest himself was visibly affected by the tributes of his contemporaries. He was prevailed upon to speak of his work, which he did modestly.

Seated at the head table with President A. Lawrence Lowell were Dr. Theobald Smith, President Emeritus Charles W. Eliot, Dr. E. H. Bradford of the Harvard Medical School, Dr. Simon Flexner of the Rockefeller Institute, Dr. W. H. Welch of Johns Hopkins, Dr. Lawrence Flick of Philadelphia, Dr. Frederick C. Shattuck, Col. Thomas Fabyan of Chicago, Dr. Henry P. Walcott, Maj. Henry L. Higginson, Dr. V. G. Moore of Cornell University, George Wigglesworth, Dr. Albert Vanderveer of Albany, Dr. A. Jacobi of New York, Dr. W. S. Thayer of Baltimore and Jerome Greene of the Rockefeller Institute. The speakers were President Lowell, toastmaster; Dr. Frederick C. Shattuck, Dr. William S. Thayer, Dr. Simon Flexner, Dr. Eliot, Dr. W. H. Welch and Dr. Bradford.

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The following were elected to membership in the American Public Health Association on June 12, 1915:

Arthur Stowell Armagnac, New York. Editor *Heating and Ventilating Magazine.*

Dr. Robert Carlisle Powell, Baltimore, Md. Ex-Secretary Medical Association for the Prevention and Relief of Tuberculosis.

Dr. William Wright Walcott, Natick, Mass. District health officer.

Dr. Lawrason Brown, Saranac Lake, New York. Member of Village Board of Health.

Dr. Aristides Agramonte, Vedado Havana, Cuba. Professor of Bacteriology and Experiment Pathology, University of Havana; chairman, Board of Infectious Diseases; member National Board of Health, Cuba.

Dr. Alfred E. Shipley, Brooklyn, N. Y. Public health officer.

Dr. James Joshua Terrill, Temple, Texas. Pathologist and Temple Sanitarium.

Dr. Walter Belknap James, New York City.

Knud Stonmann, Newark, N. J. Clerk, Statistician's Department Prudential Insurance Company of America.

Dr. Arthur Otway Peters, Dayton, Ohio. Chief Medical Inspector, Department of Health, Dayton, Ohio.

Mac Harvey McCrady, Montreal, Quebec, Canada. Chemist and Assistant bacteriologist for the Board of Health, Province of Quebec.

Dr. Walter Vernon Brem, Los Angeles, California. Physician and director of the Southern Branch of California State Hygienic Laboratory.

Dr. Lane Butler Cooke, Quarantine Station, Galveston Texas. Assistant quarantine officer.

Dr. Addison Lysander Linsecum, Galveston, Texas. Assistant state health officer.

Dr. Wm. Bell Collins, State Health Department, Austin, Texas. State health officer.